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MACHINE GUN TRAINING.

PART I.—TRAINING.

ISSUED BY THE GENERAL STAFF, FEBRUARY, 1919.

This manual cancels Infantry Machine Gun Company Training, and is to be used in conjunction with The Tactical Employment of Machine Guns (now being compiled) and The Handbook for the '303-in. Vickers Machine Gun.

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1919.

This Manual is issued by command
of the Army Council.

R. H. BRADE.

WAR OFFICE,

26th February, 1919.

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ORGANIZATION.

1. A Machine gun battalion consists of:—

Headquarters,
4 Companies.

The guns may be either Vickers or Maxim, but all the guns of the battalion will be of the same pattern.

2. A Machine gun company consists of:—

Headquarters,
4 sections, each of 4 guns.

A Machine Gun Company is commanded by a Major, with a Captain as second in command.

3. A section consists of two sub-sections, and is commanded by the senior of its two subaltern officers.

4. A sub-section consists of two gun teams, and is commanded by a subaltern. The sub-section is the smallest fire unit.

5. A gun team consists of the number of men detailed for the service of one gun. Each team is numbered from 1 to 8. The gun team is commanded by a gun commander, who will be a lance-corporal or selected gunner, other than the No. 1.

6. The machine guns of a section are carried in two limbered G. S. wagons, known as the fighting limbers. Each section has also one limbered G.S. wagon for ammunition.

7. Further details as to personnel, horses and vehicles are given in War Establishments.

PART I.—TRAINING.

CHAPTER I.

PRINCIPLES AND SYSTEM OF TRAINING.

PRINCIPLES OF TRAINING.

Section 1.—General instructions.

1. The object of training is to fit all ranks for the performance of their duties in war. This manual deals with the training of machine gun companies.

2. The principles on which all training must be based are contained in Field Service Regulations, Part I.

3. Drill is an essential factor of all training in order to establish and maintain a mutual understanding between a commander and his subordinates. It is of first importance in producing discipline and habits of absolute and instant obedience to the orders of a superior.

4. The training must include both moral and physical instruction. The development of a soldierly spirit is needed to help the soldier to bear cheerfully fatigue, privation and danger; to imbue him with a sense of honour; to give him confidence in his superiors and comrades; to increase his powers of initiative, self-confidence and self-restraint; to train him to obey orders, or to act suitably in their absence; to impress upon him that, so long as he is physically capable of fighting, surrender to the enemy is a disgraceful act; and, finally, to produce such a state of discipline that each individual will perform his duty coolly and correctly in the stress of battle.

5. Men selected for machine gun training should have strong physique, good eyesight, calm temperament and a fair measure of education. Mechanical aptitude is also of value. The work of a machine gunner entails the frequent carrying of heavy weights, sometimes over long distances. Stay-power and endurance are, therefore, of the utmost importance.

6. It is essential that all ranks should be highly trained and impressed from the beginning of their training with the need for accuracy and thoroughness. Enthusiasm and esprit de corps should be cultivated, and a keen competitive spirit fostered on all occasions.

7. All ranks should be encouraged to take part in games, as these are of value in teaching the importance of self-control, co-operation, self-confidence, initiative and determination.

Section 2.—Responsibility for training.

1. All commanders are responsible for the training and efficiency of their officers, warrant officers, non-commissioned officers, men and transport. They are also responsible that the guns, equipment and vehicles

under their command are complete and fit for service. Officers, warrant officers, non-commissioned officers and men required for special duties must be maintained in accordance with the regulations.

2. Superiors, while holding their subordinates responsible for the training of their units, will never forego their functions of guidance and control, and will exercise a general and continuous supervision over their work. In carrying out this duty they must not curb the initiative of their subordinates nor interfere unnecessarily, so long as the training is conducted on sound lines. The development of initiative in all subordinate commanders is of vital importance, and anything likely to tend to its suppression must be avoided.

3. An officer should himself be capable of performing all the duties in which he is to train his men. When qualified, he should personally train his own command, making the most of the opportunities thus afforded to study the characters of his men, to find out the special qualifications of each, and to gain their confidence.

4. Every officer, warrant officer and N.C.O. should make himself acquainted with the duties of his immediate superior, so that he may be capable of fulfilling these duties should the occasion arise.

SYSTEM OF TRAINING.

Section 3.—General instructions.

1. The instructions laid down in Infantry Training, sec. 3, will apply generally to the training of machine gun companies, substituting "sub-section" for "section," and "section" for "platoon" throughout.

2. Variety of work must be arranged, and every endeavour made to stimulate and maintain interest throughout the training, which will include many subjects requiring close application. Lessons should be short and frequent, and instruction should be carried out in the following sequence :—

- A short lecture explaining generally the lessons to be learnt.
- Demonstration by the instructor.
- Detailed explanation by the instructor.
- Imitation by the squad.
- Interrogation of the squad by the instructor.

Section 4.—Recruit training.

Recruit training will consist of the subjects laid down in Infantry Training, sec. 4, para. 1. The remaining paragraphs of sec. 4 apply generally to the recruit training of the machine gunner.

Section 5.—Individual training.

The individual training will consist of :—

- (i.) The training of officers in professional duties as laid down in King's Regulations; Training and Manœuvre Regulations; Field Service Regulations, Parts I. and II.

The machine gun officer must receive a thorough training in all the subjects laid down in The Tactical Employment of Machine Guns, The Handbook for the .303 in. Vickers Machine Gun, and this manual. He should also possess a sound knowledge of the tactics of other arms.

- (ii.) The training of non-commissioned officers and privates likely to become non-commissioned officers in :—

- The duties of a sub-section commander
- Elementary fire direction.
- Fire control.
- Reconnaissance.
- Map reading.
- Use of the compass.
- The tactical employment of the gun.
- The writing of messages and reports.
- The subjects laid down in (iii.) below.

- (iii.) The training of privates in :—

- All the subjects laid down in Part I. of this manual.
- Mechanism, etc. (Handbook for the .303 in. Vickers Machine Gun.)
- Defence against air-craft.
- Physical training (Manual of Physical Training).
- Marching and march discipline. (Field Service Regulations, Part I., secs. 24 to 33: Infantry Training, sec. 112.)
- The use of entrenching implements and entrenching tools.
- Bombing.
- Anti-gas training.

Section 6.—Collective training.

1. The collective training of machine gun units in the field should not begin until proficiency has been attained in the subjects of individual training. From the beginning of his training the nature of his duties will impress upon the machine gunner the necessity for close co-operation with his comrades. Field operations, therefore, should be regarded both as a continuation of individual training and as practice in the co-operation of the machine gun unit with other units and other arms in the field. Every opportunity should be taken of training in co-operation with the infantry.

2. In addition to the subjects laid down in Chapter VII., field operations will include training in :—

- Night operations. (Field Service Regulations, Part I., Chap. IX; Infantry Training, sec. 113.)
- Field engineering and the construction of machine gun emplacements (Manual of Field Engineering).
- Duties in billets, camps and bivouacs. (Field Service Regulations, Part I., Chap. IV.)

CHAPTER II.

CLOSE ORDER DRILL.

Section 7.—General Instructions.

1. The sub-section will be exercised in all the movements of squad drill (Infantry Training, Chapter II.), the word "sub-section" being substituted for "squad."

2. The section will be exercised in all the movements of platoon drill (Infantry Training, Chapter III.), the word "section" being substituted for "platoon."

3. The company will be exercised in all the movements of company drill (Infantry Training, Chapter IV.), the word "section" being substituted for "platoon."

4. Company drill with limbers:—

- (a) As far as possible in all drill movements, the gun and ammunition limbers should accompany their respective sections, so that the latter may manoeuvre as complete fighting units.
- (b) In drill movements no transport will be on parade with the company, except the gun and ammunition limbers.
- (c) No separate word of command will be given to the drivers of limbers. They will conform to the movements of the section to which they belong.

COMPANY DRILL WITH LIMBERS.

Section 8.—A company in column forming line facing in the same direction.

On the left (or right), form—Line. Remainder, left (or right)—Incline, quick—March.

The leading section will stand fast. Remainder will act as in squad drill.

When each section is immediately in rear of its position in line, it will receive from its commander—*Right (or Left)—Incline*, and when on the alignment—*Halt*

The company sergeant-major and limbers will move to their places in line during the movement. (Plate II.)

Section 9.—A company in line advancing in column of sections.

Advance in column of sections from the right (or left). Remainder, right (or Left)—Turn.

The right (or left) section commander will give: *Number—section, by the left (or right), quick—March.*

When the limbers are clear, No. 2 section commander will give—*Number 2 section, quick—March.* When the head of the section is in rear of the centre of the preceding section the commander will give—*Left (or right)—Incline.* On arriving in column of sections, again—*Left (or right)—Incline.*

The remaining sections will act in similar manner.

During the movement the limbers of each section will take up their position in column. (Plate III.)

Section 10.—A company in column forming column of route by sections.

Advance in column of route by sections from the right. Form—Fours—Right.

The commander of the leading section will give: *Number—section, left wheel—Quick—March.*

When the limbers of the leading section are clear, the section commander of the next section will give: *Number—section, left wheel—Quick—March.*

The remaining sections will act in similar manner. (Plate V. (a))

Section 11.—A company in line moving to a flank in column of route by sections.

Move to the right (or left) in column of route by sections, number—section leading. Form—Fours—Right (or left).

The section commander of the named section will give—*Quick—March.* When the limbers of the section are clear the next section commander will give—*Quick—March.*

The remaining sections will act in similar manner. (Plate V. (a))

NOTE.—In the event of action being expected, the formation in Sections 10 and 11 will be as shown in Plate V. (b).

Section 12.—A company in column of route by sections forming forward into column of sections at the halt.

At the halt, on the left (or right), form column of—Sections.

The commander of the leading section will at once give—*At the halt, on the left (or right), form—Section.*

The commanders of the remaining sections on arriving at column distance will act in a similar manner.

During this movement the limbers will move to their positions in column of sections.

Section 13.—A company in column of route by sections forming column facing a flank at the halt.

At the halt, facing left (or right), form column of—Sections.

The commander of the leading section will halt his section and turn it to the left (or right).

The limbers will take up their position in column of sections. The remaining sections will be led by their guides by the shortest route to their positions in column, when they will receive the command—*Halt—Left (or right)—Turn.*

Section 14.—A company in line moving to a flank in column of route.

Move to the right (or left) in column of route, number—section leading. Form—Fours—Right (or Left). Quick—March.

When the rear of the last section is clear the transport will march in the following order: Gun, ammunition, H.Q. limbers, water cart, travelling kitchen, train transport (if allotted).

The transport will be supervised by the transport officer and transport serjeant. (Plate IV.)

Section 15.—A company in column of sections forming column of route.

Advance in Fours from the right. Form—Fours. Right. Sections, left wheel. Quick—March.

Each section will move in the required direction, forming column of fours. When the rear of the last section is clear the transport will march as indicated in section 14. (Plate IV.)

☞	COY. COMDR (Mounted)
☞	2 ND IN COMMAND (do.)
☞	SECTION OFFICER (do.)
☞	TRANSPORT OFFICER (do.)
☞	SUB-SECTION OFFICER
☞	COY. S.M.
☞	COY. Q.M.S.
☞	TRANSPORT SGT (Mounted)
☞	SERGEANT
☞	CORPORAL
A	ARTIFICER
B	BATMAN
C	COOK
R	RUNNER or SCOUT
E	SADDLER
M	STOREMAN
S	SHOEING SMITH
☞	HORSE or MULE
☞	DRIVER (Mounted)
Z	BRAKESMAN

Note.—In Plates II., III., IV., and V., when the formations there shown are employed for drill purposes, the Gun and Ammunition Limbers will be the only transport on parade.

PLATE I.—KEY TO PLATES II, III, IV, AND V.

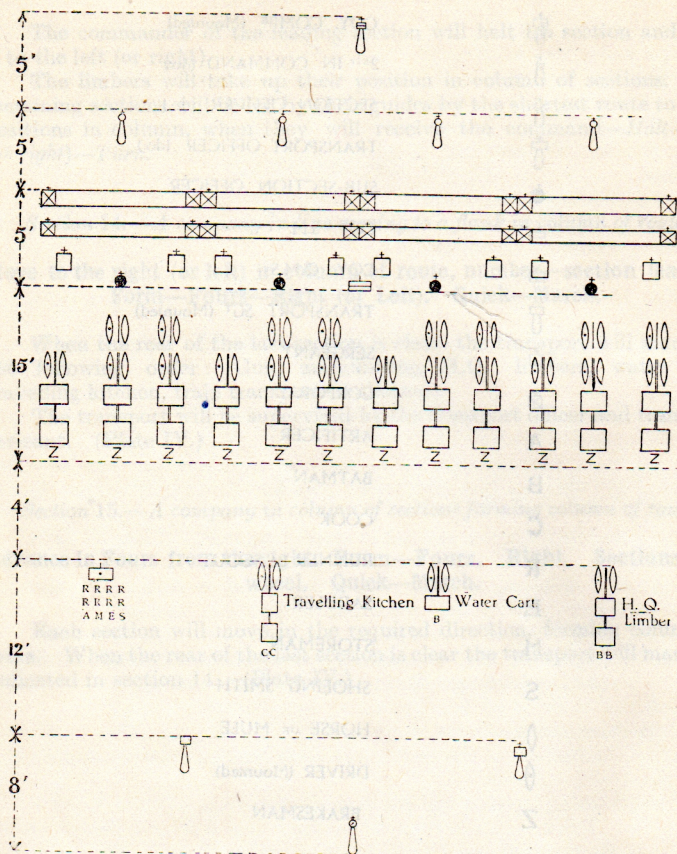


PLATE II.—M.C. COY. IN LINE DRAWN UP FOR INSPECTION.

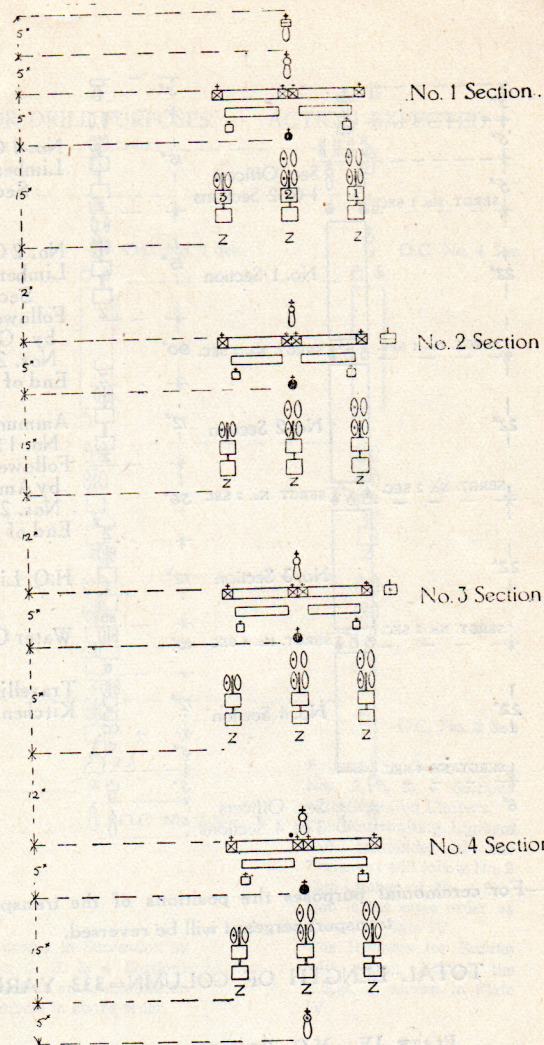
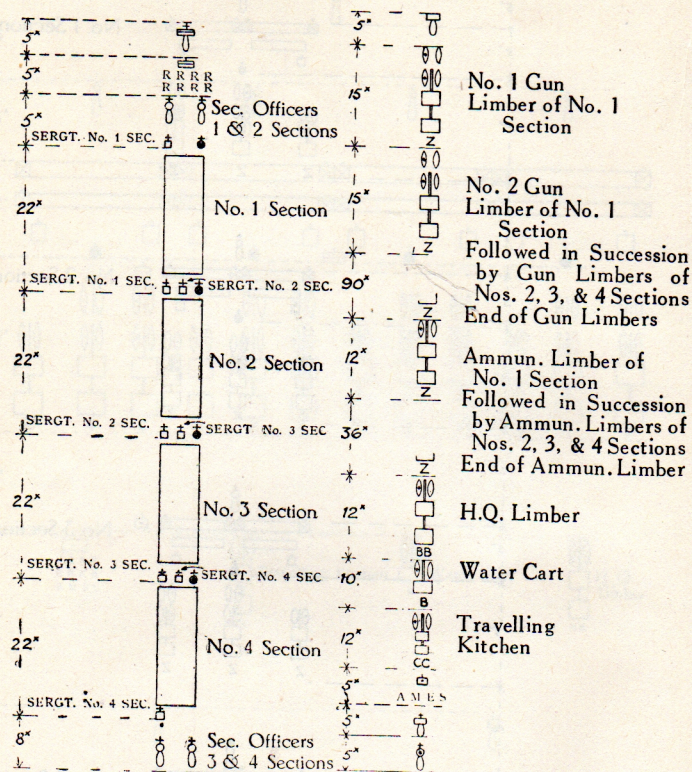


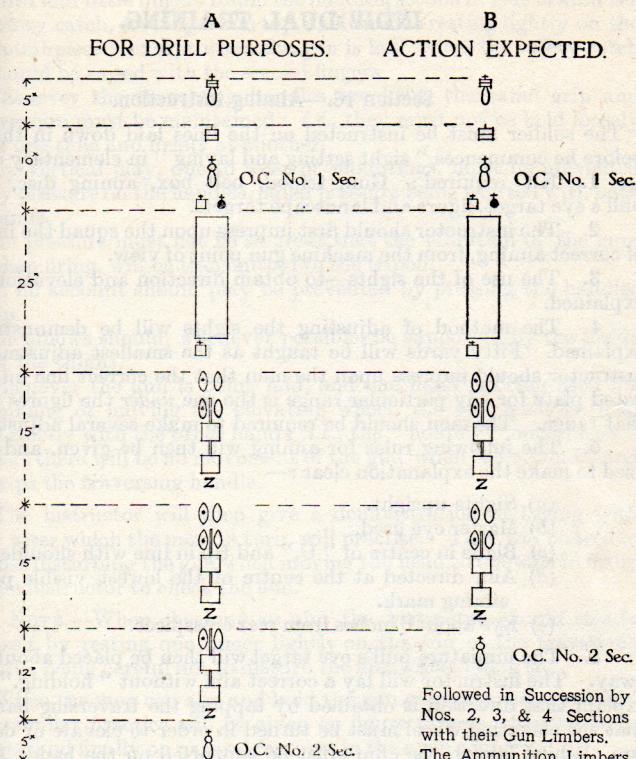
PLATE III.—M.G COY. IN COLUMN OF SECTIONS.



Note.—For ceremonial purposes the positions of the transport officer and transport sergeant will be reversed.

TOTAL LENGTH OF COLUMN=333 YARDS.

PLATE IV.—M.G. COY. IN COLUMN OF ROUTE.



Followed in Succession by Nos. 2, 3, & 4 Sections with Gun and Ammunition Limbers in above order.

Followed in Succession by Nos. 2, 3, & 4 Sections with their Gun Limbers. The Ammunition Limbers and remainder of the Transport will follow No. 2 Gun Limber of No. 4 Section in the same order as shown in Plate IV. The Runners (or Scouts) will march behind the C.S.M. as shown in Plate IV.

PLATE V.—M.G. COY. IN COLUMN OF ROUTE BY SECTIONS.

CHAPTER III.

INDIVIDUAL TRAINING.

Section 16.—Aiming instruction.

The soldier must be instructed on the lines laid down in this chapter before he commences "sight setting and laying" in elementary drill.

1. Kit required: Gun, tripod, belt box, aiming disc, miniature bull's eye target, figure and landscape targets.

2. The instructor should first impress upon the squad the importance of correct aiming, from the machine gun point of view.

3. The use of the sights—to obtain direction and elevation—will be explained.

4. The method of adjusting the sights will be demonstrated and explained. Fifty yards will be taught as the smallest adjustment. The instructor should impress upon the men that the correct line on the graduated plate for any particular range is the one *under* the figures indicating that range. The men should be required to make several adjustments.

5. The following rules for aiming will then be given, and diagrams used to make the explanation clear:—

- (a) Sights upright.
- (b) Master eye used.
- (c) Blade in centre of "U," and tip in line with shoulders.
- (d) Aim directed at the centre of the lowest visible part of the aiming mark.
- (e) Eye about 6 inches from rear crosspiece.

6. The miniature bull's eye target will then be placed about 10 yards away. The instructor will lay a correct aim without "holding." He will explain that direction is obtained by tapping the traversing handles, and that the elevating wheel must be turned in order to elevate or depress the gun. Whilst laying, the chin must be supported on the hand. A belt box may be placed across the knees and the elbows rested on the box, or the box may be placed on the ground, resting on end, and the arms rested on the top.

7. Every man should then view the aim, after which the men themselves, in turn, will lay the gun. They will not "hold" the gun during this lesson. The reasons for taking a regulation aim should be explained.

Should any faults be detected, the instructor will point out what effects they would have on shooting, and will see that such faults are remedied.

8. When sufficient progress has been made, the men must be tested by the "Triangle of error" test. The method of carrying out this test and the qualifying standard will be the same as described and laid down in Musketry Regulations (section 39), except that a gun and a Mark IV Tripod will be used instead of a rifle and aiming rest.

9. After passing the test (Musketry Regulations, para. 299, sub-para. 9), the correct method of "holding" the gun will be shown and explained. The following points in connection with "holding" should be impressed upon the men:—

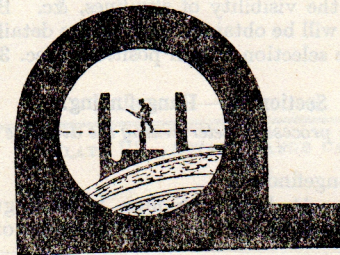
- (1) The correct method of holding the traversing handles is with the third and little fingers round the handles, second fingers behind the safety catch, forefingers on top, and thumbs resting lightly on the thumbpiece; except when the gun is laid, when the safety catch should be raised with the second fingers.
- (2) Whenever the traversing handles are held, the same grip and pressure must be maintained: *i.e.*, they must not be held loosely at one time and firmly at another.
- (3) Any vertical play, due to wear in mountings, must be prevented by pressure on the handles, equal pressure being exerted with both hands.
- (4) The pressure must not be so great that the vibration of the gun, when firing, will be transmitted to the tripod.
- (5) On no account should play be prevented by pressing the handles up.
- (6) The elbows should, whenever possible, be supported by the inside of the thighs.
- (7) Whenever the gun is being laid, and one hand is being used for tapping or moving the elevating wheel, the gun must be held correctly with the other hand: *i.e.*, the "holding" must be such that there will be no movement of the gun when the second hand grips the traversing handle.

10. The instructor will then give a demonstration of laying with "holding," after which the men, in turn, will practise. They will be told to guard against disturbing the gun when moving the head to one side in order to enable the instructor to check the aim.

NOTE.—When checking an aim the instructor should steady himself by resting one finger lightly on the top of the traversing handle, being careful not to disturb the aim whilst doing so.

11. When the men can aim and hold the gun correctly, using a bull's eye target, similar practice will be given on figure targets, then on landscape targets, and finally on natural features in the open country.

A perfect aim must be insisted upon at all times.



CORRECT AIM WITH APERTURE SIGHT.

12. The method of aiming with the aperture pattern of "fixed sight" will be taught when the ordinary sight has been mastered. The system of instruction will be as described below.

(a) Illustration of a correct aim by diagram.
(b) Used up to 500 yards, for all targets, except point targets, e.g., loop-hole.

(c) Rules for aiming.

(i.) Sights to be upright.

(ii.) The master eye to be used.

(iii.) The tip of the foresight in the centre of the aperture and the aim directed at the centre of the lowest visible part of the aiming mark.

(d) Method of instruction.

(i.) Half-inch bull's eye target at 10 yards.

(ii.) Rest for pupil's head (as in para. 6).

(iii.) Instructor lays a correct aim.

(iv.) Pupil views that aim.

(v.) Pupil lays aim; instructor criticises.

Men should be instructed to look through the aperture and not at it; also to note the field of view, which should be shown in the diagram.

NOTE.—Faults in aiming can be readily pointed out as follows:

The instructor holds a piece of white paper in front of the foresight, obliterating the aiming mark, and instructs the pupil to look along the sights, taking care that the foresight is kept in correct relation to the backsight; he then removes the paper for a few seconds while the pupil notes where the line of sight strikes the target.

Section 17.—Visual training.

Visual training should be carried out as laid down in "A Sequence of Musketry Training" * (pp. 6, 7, 31, 32). Frequent practice in the examination of ground should be given during the later stages of individual training. This should at first be confined to the recognition of natural and artificial features and the general character of the country; next, the importance of these features should be pointed out with reference broadly to the attack and the defence of the area in which they lie; and, finally, attention should be called to those which are of particular interest to the machine gunner, e.g., positions for observation to the front and to the flanks, positions that offer a good field of fire, areas on which observation of fire is likely to be obtained, localities from which hostile attacks may develop, the visibility of sky-lines, &c. By such practice a necessary introduction will be obtained to the more detailed study of cover, reconnaissance and the selection of gun positions (Sec. 36).

Section 18.—Rangefinding.

Rangefinding is the process of determining the distance in yards to a given target.

1. Methods of rangefinding.

(i.) Instrument.—At least one man in each gun team will be specially trained in the use and adjustment of the rangefinding

0	FINAL OBJECTIVE .	2000
400	RUINED MILL .	1600
900	RED COTTAGE .	1100
1150	LONE TREE .	850
1600	ROAD JUNCTION	400
2000	ASSEMBLY POINT .	0
POINT FROM WHICH MADE OUT :- 100° S. OF SUGAR FACTORY RANGE FOUND BY :- BARR & STROUD. MADE OUT BY :- J. WOOD. 1/4 DATE :- 4 5 18.		

PLATE VI.—ATTACK RANGE CARD.

RANGE CARD : No 2. GUN

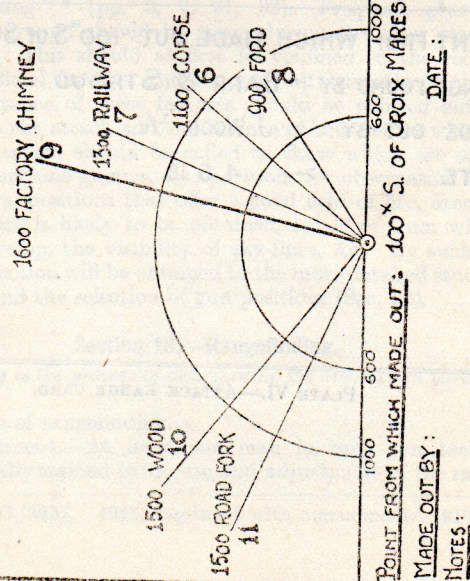


PLATE VIII.

DEFENCE RANGE CARDS.

RANGE CARD : No 1. GUN

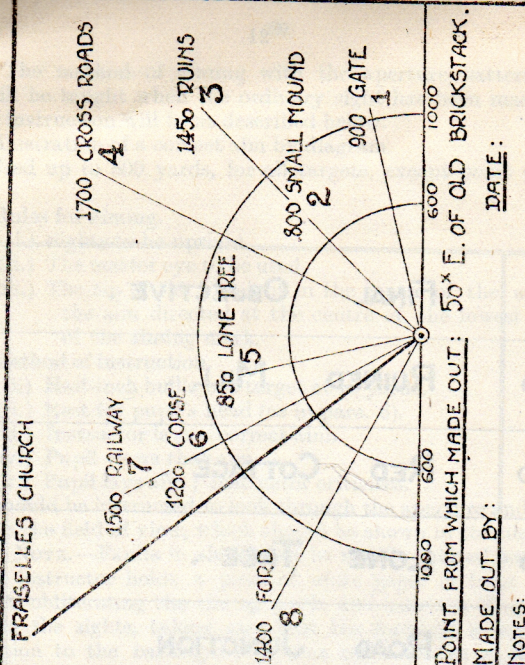


PLATE VII.

instrument. At least one officer and N.C.O. in the section should also be so trained, and every opportunity should be taken of practising all ranks in its use.

The error in rangefinding by this method should not exceed 5 per cent. of the range.

- (ii.) Maps.—This method is valuable when maps of large scale and known accuracy are available, and, if these are read correctly, the error should be negligible.

The error that may arise owing to the inaccuracy of a map should not exceed 5 per cent. of the range.

- (iii.) Judging distance.—The machine gunner will be trained in judging distance as laid down in "A Sequence of Musketry Training" (pp. 8 and 9). Owing to the fact that the gun is fitted with a fixed sight for ranges up to 500 yards attention should be particularly directed to the recognition of the 500 yards range. All ranks will be trained in judging distances up to 1,400 yards.

The error by this method should not exceed 15 per cent. of the range.

- (iv.) Range cards.—In this method, objects are marked to which the range (key range) can be accurately obtained by either of the first two methods, and intermediate distances are estimated. (Plates VI., VII. and VIII.)

For these intermediate distances the error should not exceed 10 per cent. of the range.

2. Points to be observed in making a range card for the defence.

- (i.) The position from which the range card is taken must be clearly defined.
- (ii.) Draw two semi-circles with radii representing 600 yards and 1,000 yards.
- (iii.) Draw a thick setting ray to a prominent object which should be as far away as possible.
- (iv.) Rule lines of proportionate length, and at correct angles.
- (v.) Describe each object as it appears to the naked eye.
- (vi.) Write all words in block letters horizontally.
- (vii.) Place the range on the left of each object.
- (viii.) The section officer should number the objects from right to left, and co-ordinate the object numbers of adjacent guns from right to left. (Plates VII. and VIII.)
- (ix.) Mark in any trench, river, &c., that may run across the front.
- (x.) Sign and date each card, and give the method of rangefinding used.
- (xi.) Ensure that each gun number recognizes each object.

Breadth of target.—This can be obtained by various methods, the simplest being the following :—

- (i.) From the map.
- (ii.) By using the gun and direction dial, if the range to the target is known. One degree subtends a distance equal to one-sixtieth of the range to the target.

Section 19.—Ranging.

Ranging (or registering) is the process of determining by observation of fire the direction and elevation required to hit a given target.

The direction and elevation necessary to hit the target may differ from those required under normal conditions for any of the following reasons:—

- (i.) Atmospheric influences.
- (ii.) Peculiarities of the individual gun. These may be inherent, or may be caused by wear, especially of the barrel.
- (iii.) Variation in the ammunition.
- (iv.) "Holding" of the No. 1.

Ranging should be employed whenever the tactical situation permits. If it is used, surprise effect will probably be lost; consequently, when circumstances allow, ranging should be carried out some time before a target is expected to be engaged.

Good observation of fire can only be obtained on a suitable surface, e.g., a dry ploughed field, or water. If the immediate vicinity of the target is unsuitable, fire should be directed on to any suitable position near the target, provided that the difference in range to the target can be easily determined. Telescopes, field glasses, or the rangefinding instrument should be used to observe fire, and positions from which observation can be obtained must be carefully selected. Care must be taken to avoid mistaking the fringe of the beaten zone for the nucleus, and to avoid the errors which are liable to be made when observing from above the gun or from a flank (Musketry Regulations, paras. 334 and 335).

Instruction should be given in the methods of ranging before the Machine Gun Course is fired. Bursts of fire of 15 to 20 rounds are usually sufficient; and, when fire is unobserved, alterations of elevation must be made boldly.

Section 20.—Signals.

The machine gunner will receive instruction during his recruit training in the signals laid down in Infantry Training, secs. 94 and 95.

The following machine gun signals will be used for controlling movements and fire:—

"Action."—Both arms, fully extended, raised from the sides to a position in line with the shoulders and lowered again. This motion to be repeated until it is seen that the signal is being complied with.

"Out of action."—Arm swung in a circular motion in front of the body.

"Gun ready to fire."—The No. 2 will extend his left arm horizontally.

"Stand by, ready to fire."—The controlling officer will raise his hand.

"Fire."—The controlling officer will drop his hand. The No. 2 will tap the No. 1 lightly on the back and order "Fire."

"Cease fire."—The controlling officer will wave his forearm horizontally, elbow close to the side. The No. 2 will tap the No. 1 lightly on the back, and order "Cease fire."

The following semaphore code will be used:—

O.	Fire observed over.
S.	Fire observed short.
R.	Fire observed to right of target.
L.	Fire observed to left of target.
K.	Fire observed correct.
W.	Fire unobserved, or "Wash-out."
S.A.	More ammunition required.
W.T.	More water required.
L.U.	Limber to come up to gun position.

Section 21.—Fire orders.

Before fire orders can be practised, a high standard of training must have been reached in the subjects contained in the previous sections of this chapter. In addition, officers and N.C.O.s must possess a sound knowledge of fire direction. A correct fire order is the final expression of all the factors which have to be considered before fire is opened. Constant practice both in the delivery and execution of fire orders is of the utmost importance.

In the early stages of training in this subject attention will be paid to accuracy, rather than to speed. The training will be progressive, beginning with the simplest of orders and leading gradually to the more advanced orders, some examples of which are given below. The first lessons may be given on the landscape target, but every opportunity must be taken of giving practice in the open country. On all occasions *service targets* must be indicated.

Delivery of fire orders.

(i.) Sequence. A uniform sequence must be practised in the delivery of fire orders as follows:—

- (a) The detail of guns required for the particular order—e.g., "By sub-sections," "No. 1 gun only," etc.
- (b) The range (i.e., the sighting elevation required to hit the target). This should be given first in order that, after adjusting his sights, the firer may focus his eyes to the approximate distance, thus assisting his recognition of the target; and so that there may be no need for the firer to remove his eyes from the target after it is recognized.
- (c) The indication of the target: This should be as short and explicit as possible. A target must be described as it appears to the naked eye.
- (d) The type of fire—e.g., "Searching," etc.
- (e) The command or signal "Fire"—after No. 2's hand is raised to show that the gun is laid.

(ii.) Methods.

- (a) Word of mouth. The fire order must be given as an *order*. The order should be given:—

Loudly.

Calmly.

Concisely.

With pauses between each part of the order, so that No. 1 may have sufficient time to act.

- (b) By telephone or runner, when the position of the commander so demands.

- (c) By the officer himself laying one gun and ordering the Nos. 1 to look along the sights of that gun and lay their own guns similarly with the given range. This method is useful when accuracy of indication is particularly difficult.

(iii.) Position of the commander.

The position of the commander should enable him to:—

- (a) Observe fire.

- (b) Observe the movements of the enemy.

- (c) Observe the position of our own troops.

- (d) Communicate with the Nos. 2.

For control of fire, the officer should be on the left of the guns, in order that his signals may be seen by the Nos. 2; but if he is out of their sight signals may be given by whistle, connecting file (this should not be the serjeant) or telephone.

Execution of fire orders.

Practice in the execution of fire orders is designed to inculcate implicit obedience and prompt action on the part of the No. 1 (Infantry Training, sec. 117). It will also serve to quicken his intelligence and power of observation. The repetition of orders by No. 1, and the transmission to him of signals by No. 2, must always be insisted upon and any laxity immediately checked.

Practice will be given in the execution of anticipatory orders, in which the range and target are given before the occasion for firing arises, and fire is opened without further orders at the pre-arranged moment.

Careful training will be required in the execution of orders involving the use of traversing, searching and combined sights.

Examples of Fire Orders.

RANGING. Example:—"Number 1 gun only—1,000—Pond—Ranging—Fire."

Duties of the No. 1. (a) With an observer. He will fire a burst and await orders. The observing officer will order, *e.g.*, "Up (or down) 100—One tap right (or left)," as a result of the observation he has obtained. No. 1 will make the necessary alterations in direction and sighting elevation. This is continued until the correct direction and sighting elevation to hit the target have been obtained.

(b) Without an observer. He will fire a burst and make the necessary alterations in direction and elevation, *without altering his sighting elevation*, until fire is observed to be correct. He will then adjust his tangent sight slide until his line of sight is on the target, and he will report the direction and sighting elevation to the controlling officer.

TRAVERSING. (a) Inwards traversing. This is the normal method with two or more guns.

Example:—"1,000—Between tree and gate—Inwards traversing."

The duties of the Nos. 1 on receipt of the order depend on the number of guns being used. Having adjusted their sights, the Nos. 1 would select the following points of aim with reference to the limits of traverse:—

No. of Guns.	Points of aim in enemy line for each gun.			
	No. 4.	No. 3.	No. 2.	No. 1.
4	Left	Left centre	Right centre	Right
3	...	Left	Right or left centre	Right
2	...	.....	Left	Right

When the signal to fire is given, guns will traverse their own respective limits, overlapping slightly. When three guns are used, the centre gun will traverse the centre third of the target, the flank guns traversing inwards to overlap the limits of traverse of the centre gun.

(b) Outwards Traversing may be employed if the tactical situation demands it.

(c) Oblique Traversing. The principles and orders are the same. It will be convenient in many cases to use a combination of combined sights and traversing.

Example:—"1,000 : 100 yards differences—Between tree and gate—Inwards traversing."

If the angle of obliquity is large, the Nos. 1, after traversing a short distance, must alter their sighting elevations and relay. The officer will control this alteration of sighting elevations, but in the absence of orders, the gunner should himself make the necessary alterations.

(d) The Swinging Traverse is used against dense targets at very close range, say, up to 500 yards.

SEARCHING. (a) To overcome errors in rangefinding.

Example:—"1,000—Cross roads—to 1,300—Searching."

Duties of No. 1 on receipt of the order. He adjusts the tangent sight slide to 1,000 yards and aims at the target indicated. He then alters his sights to 1,300, without altering the elevation of the gun.

Duties of No. 1 on the signal "Fire." He fires a burst, elevates, fires another burst, and continues in this sequence until aiming at the target indicated with 1,300 on his sights.

NOTE.—In the above case, as soon as the controlling officer observes the fire to be correct he will cease fire, ascertain the correct

sighting elevation, *discontinue searching*, and order fire to be re-opened with the correct elevation.

(b) To engage a target in depth.

(i.) When the near and far end of the target, and the gun are all on the same plane.

Example:—"1,000—Near end of hedge—to 1,300—Searching."

Duties of No. 1 on receipt of the order, and of the signal "Fire." In this case, as only the near end of the target will be visible to the firer, the procedure will be the same as in (a). When he has fired at the target with 1,300 on his sights, if it is necessary to search down, on receipt of the order he will, in the above example, adjust the tangent sight slide to 1,000, fire a burst, depress, fire another burst, and continue in this sequence until the line of sight is again on the target.

(ii.) When the target is on a forward slope.

Example:—"1,000—Near end of hedge—to 1,300—Far end—Searching."

Duties of No. 1 on receipt of the order are the same as in (a).

Duties of No. 1 on the signal "Fire." He fires and elevates until aiming at the *far end* of the target. When he has fired at the far end with 1,300 on his sights, if it is necessary to search down, on receipt of the order he will, in the above example, adjust the tangent sight slide to 1,000 and fire and depress until the line of sight is on the *near end* of the target.

NOTES.—(i.) In (a) and (b) above, if two guns are used the orders will be the same, but the left gun will search up and the right gun will search down.

(ii.) For the length of the burst of fire in the execution of traversing and searching fire orders, see Sec. 23, paras. 16, 17 and 18.

COMBINED SIGHTS. (a) To overcome errors in rangefinding.

Example:—"1,000 : 50 yards differences—Cross roads."

Duties of No. 1 on receipt of the order. The order should be given from a flank, and the No. 1 nearest the controlling officer will repeat the order, adjust his tangent sight slide to 1,000, and lay on the target. The next No. 1 will call out "1,050 : 50 yards differences—Cross roads," and adjust his sights to 1,050, and lay on the target. This action will be repeated down the guns by the Nos. 1 in turn.

NOTES.—(i.) When fire has been opened, using combined sights, with all guns laid on the same point of aim, the Nos. 1 are not allowed to alter elevation from observation of the strike of their supposed bullets, owing to the difficulty of determining the zones of the respective guns.

(ii.) The controlling officer, if he succeeds in determining the correct sighting elevation, will cease fire, *discontinue combined sights*, and order fire to be re-opened with the correct elevation.

(iii.) Combined sights may be ordered by the controlling officer against such a target as will allow different lateral points of aim being given to each No. 1. In this case, the No. 1 may alter

his elevation directly he sees that his fire is not striking the target, without waiting for orders from the controlling officer, and any No. 1 who ascertains the correct sighting elevation from observation of fire must at once report it to the controlling officer.

(b) To engage a target in depth.

The example and procedure are the same as in (a), but if the controlling officer observes the fire of one or more guns to be outside the area which he wishes to engage, he will cease fire, order a new sighting elevation, and re-open fire, *still using combined sights*.

NOTE.—In (a) and (b) above, combined sights may also be ordered by sub-sections, in which case the order will be, "By sub-sections—1,000 : 50 yards differences—Cross roads." On receipt of the order the commander of the sub-section nearest the controlling officer will repeat the order, and will then order "Left (or Right) sub-section—1,000—Cross roads." The commander of the next sub-section will call out "By sub-sections—1,050 : 50 yards differences—Cross roads," and will then order "Right (or Left) sub-section—1,050—Cross roads."

Section 22.—Allocation of duties.

1. The duties of the section commander are to command the section in accordance with his orders and the tactical situation, to select gun positions, to observe and to control fire generally, to regulate the ammunition supply, and to give instructions regarding the movements of his limbered wagons.

2. The duties of the sub-section officer are to assist the section commander and to act as second in command of the section. He should be qualified to replace the section commander should the latter become a casualty. Normally he will command one sub-section in action.

3. The duty of the serjeant is to supervise the guns coming into action as his sub-section officer may direct. He is responsible for replacing casualties among the gun numbers. The senior sub-section serjeant must be prepared to take command of the section in the event of both the officers becoming casualties.

4. The duty of the corporal in charge of the limbers is to supervise packing and unpacking. He will have the spare parts box handy, supervise the ammunition supply, direct the gun limber as required, and he must keep in touch with the section officer. He will be prepared to take the place of the serjeant should the latter become a casualty.

5. The following are the duties of the various numbers:—

No. 1 is the firer. He will personally clean and look after his gun, and ensure that the mechanism is working smoothly. On going into action he will carry the Mark IV tripod and place it in position, and assist No. 2 in mounting the gun. He repeats all orders received, observes his own fire when possible, makes the necessary alterations of direction and elevation, and observes the movements of his own troops and of the enemy.

No. 2 carries the gun into action and assists No. 1 to mount it. On going into action he will secure the condenser tube to the gun, and will carry the spare parts case. He will attend to the feeding of the gun, watch for signals from the officer, and generally assist No. 1.

No. 3 is responsible for keeping the gun supplied with ammunition, seeing that the condenser (half-filled with water) reaches the gun position before the water in the barrel casing boils, and for carrying out minor repairs whilst the gun is in action.

No. 4 assists No. 3 in his duties. He is responsible for keeping No. 3 supplied with ammunition, water, oil and spare parts as required.

The remaining numbers will act according to the orders of the section or sub-section officer.

6. The duties of a N.C.O. acting as "gun commander" are to supervise generally the firing of the gun. In carrying out indirect fire, he will see that the correct direction and elevation are placed and maintained on the gun. He must watch for signals from the controlling officer.

7. Section officers will ensure that each man of the section is thoroughly trained in the duties of each "number." A system of "changing round" will be arranged, so that every man will perform the several duties of the section in turn.

8. At least one man in each gun team will be trained in the use and adjustment of the Barr and Stroud range-finder.

CHAPTER IV.

MACHINE GUN DRILL.

Section 23.—Elementary drill.

Elementary drill will consist of the following :—

- (i.) Mounting the gun.
- (ii.) Dismounting the gun.
- (iii.) Loading.
- (iv.) Unloading.
- (v.) Sight setting and laying.
- (vi.) Coming into action.
- (vii.) Coming out of action.
- (viii.) Traversing and searching.
- (ix.) Mounting and dismounting the gun in the lowest position.

In order that training may be progressive this sequence should be adhered to.

1.—Kit required for each gun team.

Gun fitted with auxiliary mounting, Mark IV tripod, belt box with belt and dummies, spare parts case complete, and landscape target and targets for Part I. of the machine gun course.

2.—Laying out of kit.

- (i.) The gun and tripod will be placed in line on the ground, about 3 paces apart, and about 30 yards from the landscape target.
- (ii.) Tripod on the left, legs to the rear.
- (iii.) Gun on the right, muzzle pointing to the front.
- (iv.) Spare parts case alongside and on the right of the gun.
- (v.) The belt box about 3 paces in rear of the interval between gun and tripod.
- (vi.) When two gun teams are drilling together the interval between the kits of the teams should be about 8 paces.

3.—"Fall In."

On the command "Fall In" each team will fall in, in single rank, and stand at ease about 5 paces in front of the kit (Plate IX.)

4.—"Number."

On the command "Number," the team will number as in squad drill. The team will be cautioned that the No. 1 will repeat all subsequent orders, and that No. 2 will convey all signalled orders to No. 1.

5.—“Take post.”

On the command “Take post,” the gun team will turn to the right and move at the double to positions as follows—No. 1 will pass behind the gun and tripod and fall in on the left of the tripod. No. 2 will fall in on the right of the gun. No. 3 will fall in on the left of the ammunition box. The remaining numbers will fall in about 5 paces in rear of No. 3, No. 4 being on the right. When the state of the ground permits, all numbers will lie down. (Plate X.)

As soon as the No. 1 arrives at his position he will see that the elevating and cross-head joint pins are properly in position and turned down, and that both elevating screws are equally exposed, clamps tight, strap round rear leg and buckled, traversing clamp sufficiently tight to prevent the cross-head from swinging round when the tripod is being carried, direction and elevation dials secure.

No. 2 will at once attend to the following points—cork plug in, auxiliary mounting properly fixed, sliding shutter closed, front cover locked, “T” fixing pin screwed home and vertical, tangent sight set at 600, muzzle attachment correctly adjusted, and will sling the spare parts case across his right shoulder, first making certain that the contents are complete. (The inspection of the spare parts case is carried out twice only during drill—by the first No. 2 and by the last No. 2.) Care must be taken that the strap passes underneath the box respirator, if the latter is worn in the alert position.

No. 3 will examine the belt, see that the dummies are correctly placed in position and pointing the right way, and will then close the box. The catch of the ammunition box will be towards the front. He will then report “Ammunition correct” to No. 2, who will then report “Gun and ammunition correct” to No. 1, who in turn will report “All correct” (or otherwise) to the instructor.

6.—“Mount gun.”

NOTE.—The instructor will now bring the team to the left of the position where the gun is to be mounted, so that they may see all movements clearly and listen to explanations. He will then act as No. 1 himself, giving and repeating the order “Mount gun,” and will point out a position, which will be about 25 yards from the target, where the gun is to be mounted.

(a) To erect the tripod.

On the command “Mount gun,” No. 1 picks up the tripod, doubles forward to the position indicated, and places it in position. Whilst adjusting it the following points must be attended to: The cross-head bracket should be held by the left hand, close to the socket, the left fore-arm being supported by the left thigh, and both the jamming handles should, if possible, be manipulated with the right hand. (Plate XI.)

When the tripod is mounted the socket must be upright, the clamps tight, the tripod a convenient height for the firer when in a sitting position, and the rear leg in line with the target. No. 1 will sit down behind it, and remove the elevating and cross-head joint pins whilst doing so.

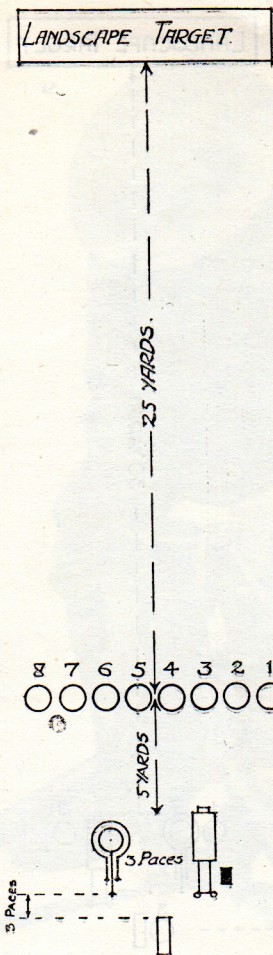


PLATE IX.—ELEMENTARY DRILL—"FALL IN,"

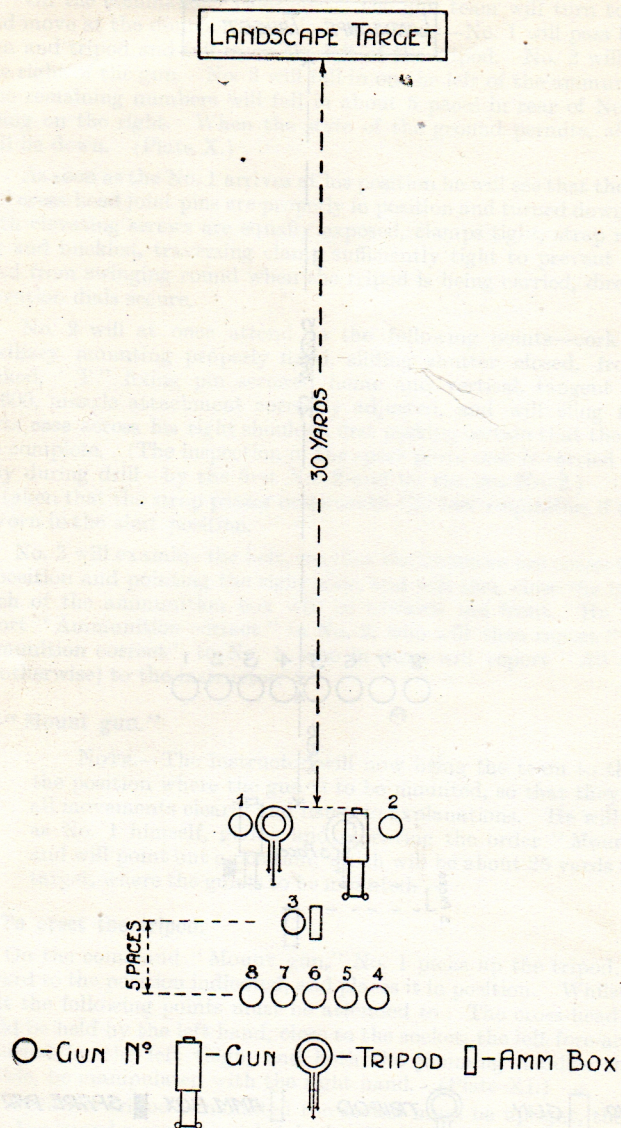


PLATE X.—ELEMENTARY DRILL—"TAKE POST,"



PLATE XI.—ELEMENTARY DRILL—ERECTING TRIPOD.

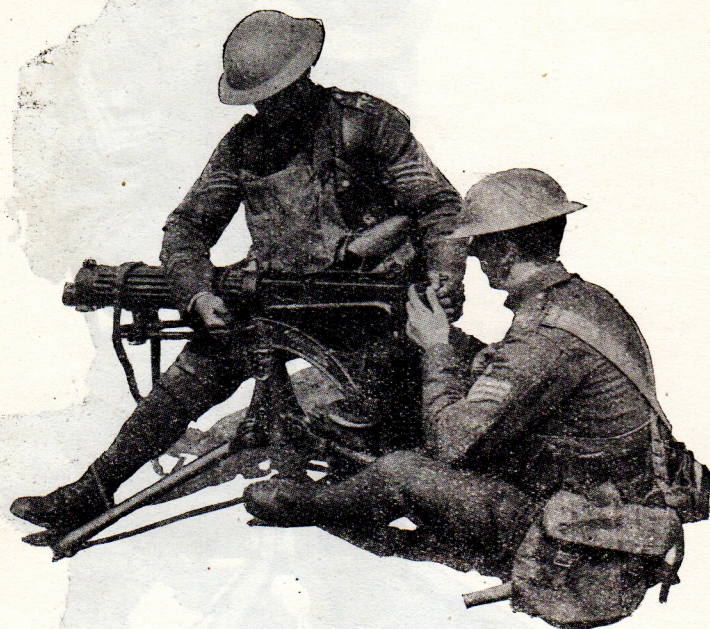


PLATE XII.—ELEMENTARY DRILL—MOUNTING GUN.

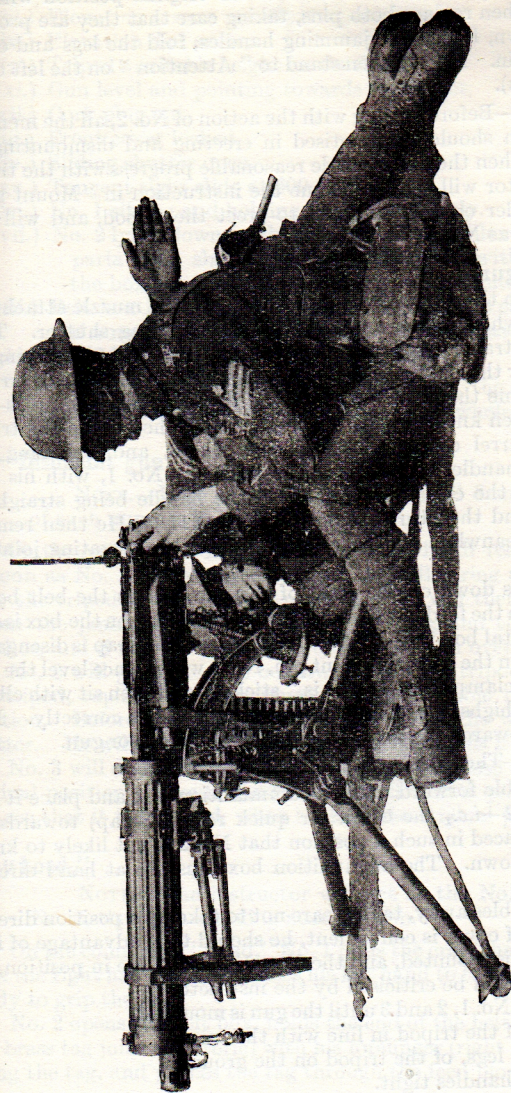


PLATE XIII.—ELEMENTARY DRILL—NORMAL FIRING POSITION—SITTING.

(b) To dismount the tripod.

No. 1 springs up and doubles back to the original position with the tripod. He will then replace both pins, taking care that they are properly in and turned down, loosen the jamming handles, fold the legs and clamp them together again. He will then stand to "Attention" on the left of the tripod (or lie down).

NOTE.—Before dealing with the action of No. 2, all the members of the team should be practised in erecting and dismounting the tripod. When they have made reasonable progress with the tripod, the instructor will then continue the instruction in "Mount gun." He will order one of the team to erect the tripod, and will then himself act as No. 2.

(c) To mount the gun.

No. 2 picks up the gun, taking care not to dig the muzzle attachment into the ground whilst doing so, and opens the sliding shutter. Then, holding the right traversing handle with the left hand and carrying the barrel casing under the right arm, he doubles forward to the tripod, arriving about the same time that No. 1 is removing the elevating and cross-head joint pins. He then kneels on his left knee, places the gun on the tripod supporting the barrel casing with the right thigh, and, releasing hold of the traversing handle, which should be taken by No. 1, with his right hand he drives in the cross-head joint pin, the handle being straight up whilst doing so, and then turns it down (Plate XII.). He then removes the cork plug. Meanwhile No. 1 similarly puts in the elevating joint pin and turns it down.

No. 2 then lies down on the right of the gun, places the belt box in position in line with the feed block, and sees that the strap on the box is clear of the lid, or, if a metal box is used, that the quick release strap is disengaged.

After putting in the elevating joint pin, No. 1 will at once level the gun, test the traversing clamp to see that it is "sticky," and then sit with elbows resting inside the thighs, and hold the traversing handles correctly. Eyes must be directed towards the target, and not at his hands or gun.

NOTE.—The instructor will then act as No. 3.

No. 3 will double forward with the ammunition box and place it conveniently for No. 2—i.e., the catch (or quick release strap) towards the gun and the box placed in such a position that No. 2 is not likely to knock it over as he lies down. The ammunition box must be at hand directly No. 2 is ready for it.

No. 3 then doubles away, taking care not to take up a position directly behind the gun. If cover is convenient, he should take advantage of it.

When the gun is mounted, and the Nos. 1, 2 and 3 are in position, the following points should be criticised by the instructor:—

- (i.) Actions of No. 1, 2 and 3 until the gun is mounted.
- (ii.) Rear leg of the tripod in line with the target.
- (iii.) Shoes, not legs, of the tripod on the ground.
- (iv.) Jamming handles tight.
- (v.) Socket upright.
- (vi.) Traversing clamp sticky.

NOTE.—This must be tested by the instructor in the same way that the No. 1 tests it—i.e., by tapping the traversing handle.

- (vii.) Pins properly in and turned down.
- (viii.) Elevating screws equally exposed.
- (ix.) Elevation dial secure.
- (x.) Tripod a suitable height for the firer.
- (xi.) Gun level and pointing towards the target.
- (xii.) Cork plug out.
- (xiii.) Front cover locked.
- (xiv.) Sliding shutter open.
- (xv.) Tangent sight slide at 600 yards.
- (xvi.) No. 1 sitting and holding the gun correctly.
- (xvii.) No. 2 lying down, with his head below the level of the gun, spare parts case slung across his shoulder, with strap underneath the box respirator if worn in the alert position.
- (xviii.) Belt box in correct position, with the strap clear of the lid; or, if a metal box is used, with the quick release strap disengaged.
- (xix.) No. 3 lying down in rear and to a flank.

NOTE.—When the instructor criticises, the faults each number has committed should be pointed out to the whole team.

7.—"Dismount gun."

NOTE.—Here again the instructor will demonstrate the duties of each number in turn.

On the command "Dismount gun," No. 1 will remove both pins, and as soon as No. 2 has removed the gun, he will spring up and double back with the tripod to the original position. He will then replace both pins, loosen the jamming handles, fold up the legs, and tighten the jamming handles, and if necessary align the cross head arm over the rear leg.

No. 2 will push the belt box away from the tripod, lift the gun from the tripod, replace the cork plug, and then double back to his original position. Before placing the gun on the ground he will close the sliding shutter. He will finally re-set the sight at 600 yards if necessary.

No. 3 will double forward, seize the belt box, and carry it back to the original position. Should the box be fitted with a quick release strap, he will see that it is fastened, when back at the original position.

8.—"Load."

NOTE.—The instructor will act as the No. 1 and then as the No. 2, the team standing near the gun.

On the command "Load," No. 1 pulls the crank handle on to the roller with the right hand, and advances his left hand to the left of the feed block, ready to grip the belt.

No. 2 opens the belt box, holds the end of the belt (at the point where the brass tag joins the fabric) with his forefinger (right hand recommended) along the tag, and pushes the tag through the feed block as far as possible.

NOTE.—With the metal belt boxes, both halves of the lid will be opened. One half may be closed later if necessary.

No. 1 grips the tag, and pulls the belt through the feed block as far as possible. He must pull the belt *slightly* to his left front when doing so. He then releases the crank handle, taking care not to allow his right hand

to move forward with it. He again pulls the crank handle on to the roller, pulls the belt slightly to his left front and releases the crank handle. Whilst pulling the crank handle on to the roller the belt will be held (but not pulled) with the left hand. He then resumes his holding on the gun.

NOTE.—The instructor should explain that the pulling of the belt slightly to the left front is only to avoid the natural tendency to pull it to the rear, *i.e.*, towards the No. 1, and that to pull the belt too much to the left front, or with much force, must be guarded against.

9.—“Unload.”

NOTE.—The instructor will perform the duties of No. 1 and then of No. 2, the team standing near the gun.

On the command “Unload,” No. 1 will pull the crank handle on to the roller, and immediately allow it to fly forward again. Should the tangent sight be up, it will be lowered at the same time with the left hand. He will repeat this movement. He will then press the top and bottom pawls of the feed block with the right hand, the top pawls being pressed with the thumb, and the bottom pawls with the fingers, taking care to keep the hand clear of the entrance to the feed block. No. 2 will withdraw the belt and pack it carefully in the box. When the last round is clear of the feed block No. 1 will press the thumbpiece with the left hand. The wooden box must be locked, but with the metal box the lids need only be closed, not locked.

NOTE.—All numbers should now be practised in loading and unloading until reasonable progress is made. Should any man exhibit a tendency to slur the loading motions, it may be advisable to make him load “by numbers,” counting aloud whilst doing so.

10.—To adjust the sights.

NOTE.—Before this lesson and the next are dealt with, instruction in aiming must have been given. (Sec. 16, “Aiming instruction.”)

On the range being given, No. 1 will raise the tangent sight (unless the range is 500 yards or under, when the fixed sight will be used), and adjust the slide to the range ordered.

11.—To lay the gun.

On the target being indicated by the instructor, No. 1 will tap the gun over until the correct direction is obtained, and elevate or depress until the aim is correct. Should a large change in direction be necessary, No. 1 will order No. 2 to loosen the traversing clamp, and will swing the gun roughly on to the target, order No. 2 to tighten, and then lay accurately by taps. It is most important that whilst tapping the gun, or manipulating the elevating wheel, the correct “holding” should be maintained with the other hand.

As soon as the aim is correct and the correct holding taken, No. 1 will, by the word “Up,” order No. 2 to put up his hand (Plate XIII.).

NOTE.—After the instructor has given a demonstration of how to lay the gun all the men will be exercised.

Care must be exercised when checking the aim, to prevent the gun from being moved as the No. 1 moves his head to one side to allow the aim to be viewed by the instructor.

12.—“Fire.”

On the command or signal “Fire” being given, No. 2 will tap No. 1 lightly on the back and say “Fire,” and No. 1 will instantly press the thumb piece. He must press it in as far as possible, and must not disturb the aim whilst doing so.

The thumbpiece must be pressed in by a quick and even movement of the thumbs, and the eyes must be directed at the target. The tendency to look down at the thumbpiece must be checked.

13.—“Cease fire.”

On the command or signal “Cease fire” being given No. 2 will tap No. 1 lightly on the back and say “Cease fire,” and No. 1 will at once release the safety catch, and release the pressure on the thumbpiece. He should then check his aim, and correct it if necessary.

14.—“Action.”

When the men have made sufficient progress in the foregoing lessons, they will be exercised in combining them, and coming into “Action.” Three aiming marks, which must be service targets, will be indicated on the landscape target by the instructor. (The instructor may walk up to the target to do this.) After the range and target have been given, the command or signal “Action” will be given. The gun will then be mounted, loaded and laid; and when the No. 2 puts up his hand, the various points taught in the earlier lessons will be criticised. The laying of the gun should be the first point criticised.

NOTE.—No. 2 must not be allowed to adjust the sights. Each number must perform the duties laid down in the earlier lessons.

15.—“Out of action.”

The following methods of taking the gun out of action will now be explained and practised.

The particular method to be employed would depend upon the circumstances at the moment, No. 1, as a rule, deciding which method to employ.

First method.

When the gun is in action and no cover exists in the vicinity.

In this case, the gun will be unloaded and dismounted on the spot, each No. then carrying away his own load.

On service No. 3 might not be required, Nos. 1 and 2 dealing with the belt box or boxes, as circumstances suggest.

For instructional purposes, in this case, the instructor will give the caution “No cover” before the command “Out of action.”

Second method.

When the gun is in action and cover is presumed to exist in the vicinity, *e.g.*, gun in action firing just over the top of a bank, or over the shoulder of a mound.

In this case the gun will be unloaded, except that the belt will be left in the feed block, and the gun will then be dragged back under cover (Nos. 1 and 2 taking care not to expose themselves), after which the unloading and

dismounting will be completed. For instructional purposes the instructor will give the caution "Short cover" before the command "Out of action."

Third method.

When the gun is in action and cover exists which is too far away to permit of the gun being dragged the whole way, but close enough to avoid the necessity of dismounting it on the spot (say, up to 50-60 yards)

Two courses are open to the gun numbers.

(a) Two man load.

The gun will be unloaded by Nos. 1 and 2 without removing the belt; No. 1 will hold the rear and left legs, No. 2 will hold the right leg of the tripod and carry the ammunition box as most convenient, the belt still being through the feed block.

(b) Three man load.

The gun will be unloaded without removing the belt, and No. 3 signalled up.

No. 1 will hold the left leg of the tripod with the left hand. No. 2 will hold the right leg with the right hand, and the ammunition box with the left hand, the belt still being through the feed block. No. 3 will hold the rear leg with the right hand.

NOTES.—(i.) The procedure laid down for two and three man loads will be taught, but the class should be warned that there are variations in each which may be preferred by individuals, the end to be aimed at in all cases being speed.

For instructional purposes the instructor would give the caution "Long cover, two (or three) man load," before the command "Out of action," and would point out where the cover is supposed to exist.

If there are more than one belt box at the gun, the No. 3 will come up to the gun, so necessitating the "Three man load," for which the cautionary words would have to be given.

(ii.) A convenient way of carrying the tripod for any distance is to arrange it on the shoulders so that the rear leg lies flat down the back, while the front legs are clamped at an angle of about 45° with the horizontal, and rest on the shoulders.

16.—Traversing.

The gun will be mounted exactly 25 yards from the target as used in the Machine Gun Course, Practice 1, before instruction begins; and the fact that the figures are four inches apart, and that each space measures two inches across, must be pointed out to the men.

The instructor will explain that the object of the exercise is to develop a consistent, automatic tap, and to teach the degree of tightness required in the traversing clamp, in order that the line of sight may be displaced two inches at 25 yards each time the gun is tapped.

The following points will then be explained:—

- (i.) A strong tap with a tight clamp is much preferable to a weak tap with a loose clamp.
- (ii.) When tapping with either hand, the gun must be held correctly with the other hand, and the safety catch kept raised.
- (iii.) Eyes must be directed at the target the whole time, and not at the rear end of the gun or along the sights, except momentarily for checking the aim.
- (iv.) If the gun moves too much or too little, the *traversing clamp* must be altered, *not* the tap.

Between each tap, the thumbpiece will be pressed a full second, which is the time required to fire a group of 5 to 10 rounds.

The instructor will then show how he tests the traversing clamp, and give a demonstration of traversing. All numbers will then be exercised, traversing with the left as well as with the right hand; the tangent sight will be raised, but not used, during the exercise.

17.—Searching.

The gun will be mounted exactly 25 yards from the target, as used in the Machine Gun Course, Practice 1; the target will be placed on end.

The instructor will explain that the object of the exercise is to train men to turn the wheel so that the line of sight is displaced up, or down, two inches at 25 yards for every turn.

The following points will then be explained:—

- (i.) The wheel will be manipulated with the right hand only.
- (ii.) The wheel must be grasped firmly and turned boldly—not hesitatingly.
- (iii.) Eyes must be directed at the target whilst the wheel is turned.

NOTE.—Whilst learning, the men should be allowed to look along the sights, so that they may realise how much the wheel ought to be moved.

Between each turn of the wheel, the thumbpiece will be pressed for about four seconds, which is the time required to fire a group of 30 to 40 rounds.

The instructor will give a demonstration, the men afterwards being exercised.

18.—Oblique traversing.

The gun will be mounted exactly 25 yards from the target, as used in the Machine Gun Course, Practice 1. Small figures should be pasted diagonally across the upper part of the target, four inches apart.

The instructor will explain that the object of the exercise is to train men in combining traversing with the manipulation of the elevating wheel. An example of when such a combination might be necessary—say a hedge running obliquely away from the gun position—will be given.

The following points will then be explained:—

- (i.) The correct sequence of action must be followed, *i.e.*, *Fire, tap, elevate (or depress)*.

(ii.) The tapping must be automatic as in ordinary traversing.

(iii.) When elevating or depressing the gun, the sights must be used.

It is apparent that the greater the angle which the line to be traversed makes with the horizontal, the greater will be the turn necessary to bring the sights on to the mark after traversing, and *vice versa*. The turn in this case must not be confused with the two-inch turn in the previous lesson.

The thumbpiece will be pressed from one to four seconds, the greater the angle between the line to be traversed and the horizontal, the longer the pressure.

The instructor will give a demonstration, after which all the men will be exercised.

19.—Swinging traverse

The gun will be mounted exactly 25 yards from the target, as used in the Machine Gun Course, Practice 1.

The instructor will explain that this method of traversing is only employed against linear targets at very close ranges, when the normal method of traversing is likely to prove too slow.

The following points will then be explained :—

- (i.) A certain amount of "stickiness" is advisable from the point of view of control, the vibration of the gun rendering it easy to swing.
- (ii.) The gun must not be moved by a movement of the forearms only. The upper part of the body should be fairly rigid, and the gun should be moved by forcing the upper part of the body over to the opposite side to which it is desired to traverse.
- (iii.) The rate of movement should be such that the line of sight is moved about one yard in two seconds, when the target is 25 yards from the gun. The movement of the gun is almost imperceptible.
- (iv.) The thumbpiece should be pressed at the same time as the gun begins to move.

The instructor will give a demonstration, after which all the team will be exercised. The importance of the cross head being upright must be emphasised.

20.—Mounting and dismounting the gun in the lowest position.

When the men have made sufficient progress in the previous lessons, they will be taught how to bring the gun into action with the tripod mounted in the lowest position.

The system of instruction will be as described in all the earlier lessons.

It will be explained that the low position may be necessary when only low cover, or none at all, is available.

The instruction will be divided into three stages.

1st Stage.

When, before beginning, the tripod is folded in the usual way, *i.e.*, the rear leg set at a suitable angle for the normal sitting position.

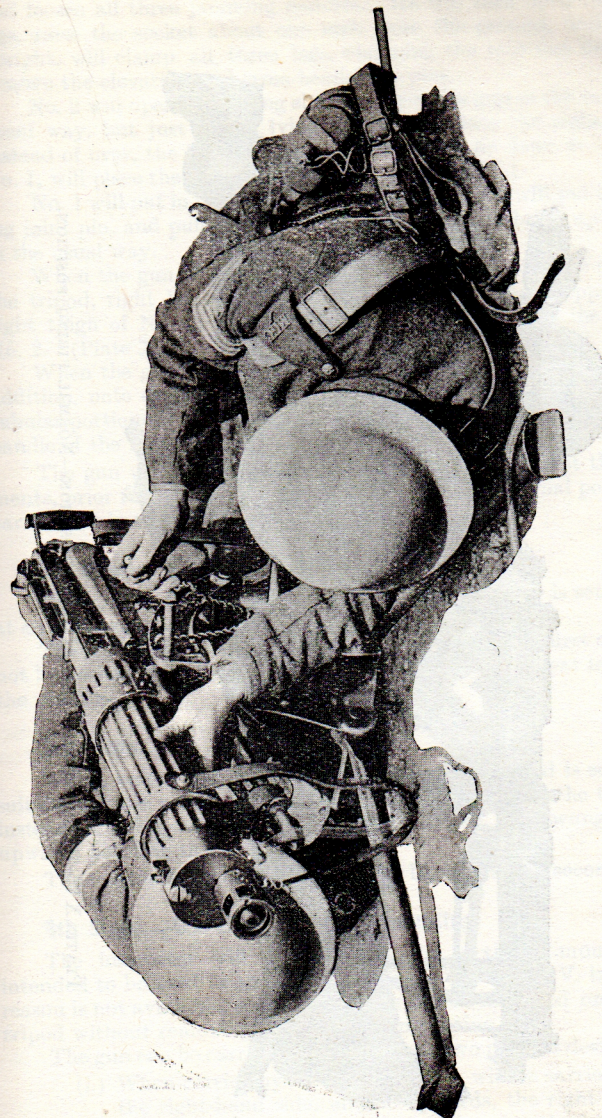


PLATE XIV.—ELEMENTARY DRILL—LOWEST POSITION—MOUNTING GUN.

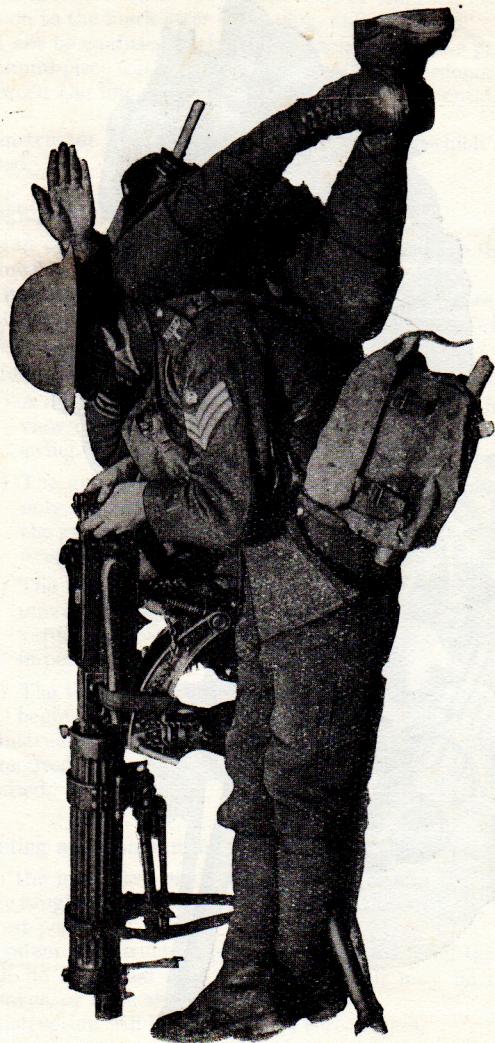


PLATE XV.—ELEMENTARY DRILL—LOWEST POSITION—NORMAL FIRING POSITION.

On the command "Mount gun," No. 1 will carry the tripod to the position indicated, place it on the ground, lie down on the left of the tripod, and loosen all three jamming handles. He will then open the two short legs, raise the socket about one inch from the ground, and, keeping it upright, will clamp all three legs, clamping the rear one first. He will remove the elevating and cross-head joint pins.

No. 2 will open the sliding shutter, carry the gun to the position in the usual way, but just before lying down, will place the right arm under, instead of over, the barrel casing. He will then lie down and, assisted by No. 1, will place the gun on the tripod. (Plate XIV.)

No. 1 will put in the cross-head joint pin. No. 2 will put in the elevating joint pin, and pull out the cork plug. No. 3 will bring up the belt box in the usual way.

When the gun is mounted, No. 1 will lie with both legs on the left of the tripod, right leg crossed over left, his back being supported by the right thigh of No. 2, and his neck being supported by the left knee of No. 2. (Plate XV.)

When the gun is mounted, the usual points will be criticised, and, in addition, note should be taken that the shoes of the tripod and not the tubular portions of the legs are resting on the ground, and that the jamming handle of the rear leg does not interfere with the elevating wheel.

The gun will be dismounted in the usual way, except that all movements, prior to carrying the gun and tripod to the original position, will be carried out in the prone position.

2nd Stage.

When, before beginning, the rear leg of the tripod is set and clamped at an angle suitable for the lowest position.

The instruction will follow the same lines as in the first stage. It will not be necessary to loosen the jamming handle of the rear leg on reaching the position.

3rd Stage.

When, before beginning, the rear leg of the tripod is set at an angle suitable for the prone position, and when, in addition, the two front legs, instead of being folded alongside the rear one, are swung forward and upward, pointing in the air.

The instruction will follow the same lines as in the second stage.

4th Stage.—Use of the auxiliary mounting.

The instructor will explain that the auxiliary mounting is only intended to be used in an emergency, when the Mark IV. tripod for some reason is not available, and that the gun can be mounted on the Mark IV. tripod without removing the auxiliary mounting.

The gun can be carried by either one or two men, as desired.

- (i.) When carried by one man, the gun will be carried vertically on the right-hand side, muzzle upwards, the right hand grasping the rear leather band, back of the hand to the front, and taking all the weight; the left hand steadying the muzzle end by means of the light mounting clip.

(ii.) When carried by two men, the leather straps, one on the rear crosspiece, and one on the front clip band, enable Nos. 1 and 2 to carry the gun between them.

When mounting the gun with the auxiliary mounting No. 1 will turn the gun on its left side, and No. 2 will open the tripod legs.

When the gun is mounted, the position of Nos. 1 and 2 will be the same as in the previous stages. (Plate XV.)

Section 24.—Tests of elementary training.

The following tests of elementary training have been devised to assist officers in testing the efficiency of their companies in elementary training, and also to ensure that no detail of such training is overlooked. It is important that these tests should not be considered as competitions against time, for although quickness is necessary, accuracy is the first essential. No man should, therefore, be passed as efficient unless all the points are properly fulfilled, even though he may complete them in the standard time.

The tests must be carried out in strict accordance with the detailed instructions given, for unless the smallest details are insisted upon, the time limit will not be applicable. In carrying out these tests, time can be saved if the first pair complete tests 1 to 5 consecutively; the remainder can be carried out as convenient.

The entire personnel of a Machine gun company, including the drivers when possible, should qualify in these tests, acting both as No. 1 and No. 2. This is necessary, for on service any member of a company may be required to replace a casualty at a moment's notice. In all tests No. 1 will repeat all orders received. The No. 1 should not be failed when, owing to the fault of No. 2, the time limit is exceeded. He must be tested again with a fresh No. 2.

No man will fire the Machine Gun Course until he has correctly passed these tests of elementary training. A record of these tests will be kept by each sub-section commander and produced for inspection by the company commander as required.

(i.) To erect the tripod and mount the gun on the command "Mount gun."

Nos. 1, 2 and 3 will take post, lying down if the ground permits. The position where the gun is to be mounted to be not more than 5 yards away.

POINTS TO BE OBSERVED.—All the points given in sec. 23, para 6(c).

STANDARD TIME—20 SECONDS.

(ii.) To load the gun on the command "Load."

In continuation of (1)—Belt with a few dummy rounds at the end, properly packed in the box, which will be closed and fastened.

POINTS TO BE OBSERVED.—The gun to be correctly loaded; all loading motions to be quite distinct and correct, and to be carried out without any slurring.

STANDARD TIME—5 SECONDS.

(iii.) To adjust the sights and lay the gun on the command "(Range)—(Target)."

In continuation of (ii.)—Gun loaded and ready to be laid. Three service targets will first be pointed out on a landscape target placed about 25 yards from the gun, but the No. 1 being tested will not know which is to be given. Any range may be ordered, so long as it will not be necessary to alter the slide by more than 500 yards when adjusting for the range ordered. Before beginning, the tangent sight slide will be set at 1,000.

POINTS TO BE OBSERVED.—That the slide is adjusted and the gun laid with absolute accuracy. When the instructor is checking the aim No. 1 must maintain his "holding" pressure on the handles. No. 1 must be careful, however, that he does not exert lateral pressure when leaning to one side to clear the sights.

STANDARD TIME—8 SECONDS.

The time will be taken from the range being ordered until No. 2 holds up his hand, indicating that No. 1 is ready to open fire.

(iv.) To unload the gun on the command "Unload."

In continuation of (iii.).

POINTS TO BE OBSERVED.—Gun unloaded, tangent sight lowered, unloading motions to be quite distinct, belt withdrawn and repacked carefully in the box with lid closed and fastened; lock spring released.

STANDARD TIME—5 SECONDS.

(v.) To dismount the gun on the command "Dismount gun."

In continuation of (iv.). The gun will be dismounted and, together with the tripod and ammunition box, will be placed in the same position as at the beginning of Test 1.

POINTS TO BE OBSERVED.—All the points as when "All correct" is reported before mounting gun.

STANDARD TIME—15 SECONDS.

(vi.) To bring the gun into action on the command "Action," e.g., "900—Fir tree—Action."

This test combines (i.) to (iii.). It emphasises the necessity for proficiency in all details required before a gun can open fire with effect. This test should therefore not be applied until proficiency has been attained in each of those which precede it.

POINTS TO BE OBSERVED.—All points as laid down for tests (i.), (ii.), and (iii.). When No. 1 is ready to open fire, No. 2 will hold up his hand.

STANDARD TIME—35 SECONDS. The time will be taken from the command "Action" until No. 2 raises his hand, indicating that No. 1 is ready to open fire.

(vii.) **Horizontal traversing.** On the command "Fire," e.g., "800—Horizontal row—Left figure—To fifth figure from left—Traversing—Fire."

The target will be as for the Machine Gun Course, Practice 1, placed at 25 yards from the gun. The gun will be laid on any figure that may be ordered. The tangent sight will be raised, but the firer must keep his eyes directed at the target during the traverse. The tests will comprise traversing from RIGHT to LEFT, as well as from LEFT to RIGHT. When the gun is laid, the aim should be checked by the officer conducting the test. On the command "FIRE," No. 1 will fire a group at the figure named, then traverse, so that the next group will be fired at the space between that figure and the next; the subsequent groups will be fired at a figure and space alternately. The test will not be completed until the space between 5 figures inclusive has been traversed. In order to ensure that the traversing is satisfactory throughout, the order to cease fire will be given at least once during the traverse, but not before 5 groups have been fired, and the laying will be checked; this will be repeated when the limit of the traverse is reached.

POINTS TO BE OBSERVED.—That No. 1 tested his tap before beginning the test; the object is to test if No. 1 has acquired the correct automatic tap; the gunner will not pass the test if more than one tap out. Tapping backwards to correct errors will not be allowed. By counting the number of taps, the correct point of aim can be calculated, e.g., if fire be opened on the first figure, and stopped after the sixth tap, the gun should then be laid on the fourth figure.

STANDARD TIME—2 SECONDS FOR EACH COMPLETE SERIES, i.e., one second for a group and one second for a tap. This time is the minimum; the total time must not be exceeded by more than 5 seconds.

(viii.) **Searching.** On the command "Fire," e.g., "800—Vertical row—Bottom figure—To 1,300—Searching—Fire."

The target will be as for the Machine Gun Course, Practice 1, placed on end at 25 yards from the gun.

The procedure will be as for (vii.) "Searching" being substituted for "Traversing." The tests will comprise searching up and searching down.

POINTS TO BE OBSERVED.—The object is to test if No. 1 has acquired the correct automatic turn of the wheel. The gunner will not pass the test if more than one turn of the wheel out. Turning the wheel backwards, to correct errors, will not be allowed. By counting the number of turns, the correct point of aim can be calculated as in (vii.). When the aim is being checked the tangent sight slide should be adjusted to the initial range.

STANDARD TIME—5 SECONDS FOR EACH COMPLETE SERIES, i.e., four seconds for a group and one second for a turn of the wheel. This time is the minimum; the total time must not be exceeded by more than 5 seconds.

(ix.) **Oblique traversing.** On the command "Fire," e.g., "800—Oblique row—Left figure—To fifth figure from left—Traversing—Fire."

The target will be as described in Sec. 23, para. 18, placed at 25 yards from the gun.

The procedure will be as for (vii.), but in this test manipulation of the elevating wheel is included and the firer is allowed to look along his sights. The tests will comprise traversing from RIGHT to LEFT, as well as from LEFT to RIGHT. The gunner will not pass the test if more than one tap out.

POINTS TO BE OBSERVED.—As in test (vii.).

STANDARD TIME—5 SECONDS FOR EACH COMPLETE SERIES, i.e., three seconds for a group, one second for a tap, and one second for a turn of the wheel. This time is the minimum; the total time must not be exceeded by more than 5 seconds.

(x.) **Immediate action.**

In this test the man will be required to rectify correctly each of four different stoppages within a certain time. These stoppages will be set up to simulate—

					Position.	Standard time.
(1)	Weak charge	...	...	...	1st	10 sec.
(2)	Damaged cartridge	...	...	...	2nd	15 "
(3)	A cross-fed cartridge	...	...	...	3rd	10 "
(4)	A missfire	...	...	...	4th	10 "

A target should be indicated to the whole squad previous to the test. The crank handle should be covered with a cloth to conceal its position. On the removal of the cloth for covering the crank handle, the No. 1 will perform the immediate action.

Time will be taken from the moment the cloth is removed to the moment that the thumbpiece is pressed for re-opening fire. The immediate action must be correctly performed and the gun accurately relaid. The order in which stoppages are set up should be varied.

(xi.) **Belt filling.**

(a) A heap of 25 rounds of ball ammunition will be placed beside a man, and these will be inserted in a belt.

STANDARD TIME—1 MINUTE.

(b) As for (a), but 250 rounds are to be inserted in a belt by one man.

STANDARD TIME—12 MINUTES.

POINTS TO BE OBSERVED.—Rounds to be placed in a heap and not arranged. Inspection of the belt on completion will show if it has been filled correctly.

Section 25.—Combined drill—Direct fire.

Instructions in Machine Gun Signals (sec. 20) will be given before combined drill is carried out, and these signals should henceforth be used whenever possible.

Combined drill is best carried out with four or more guns. An officer will control the drill, and a N.C.O. will supervise each gun team. The N.C.O. will take times and carefully note the performance of each detail; he will not assist the gun team, nor give any instructions unless so ordered. When the state of the ground permits, all numbers should lie down, Nos. 3 and 4 forming a short chain of supply, and the remainder continuing the chain, or representing reserves to replace casualties.

The purpose of combined drill is to increase proficiency in elementary drill and to provide practical instruction in the following subjects :—

- (i.) The delivery and execution of fire orders. This opportunity should be taken of practising officers and non-commissioned officers in fire control.
- (ii.) Immediate action.
- (iii.) The replacement of casualties and breakages.
- (iv.) The supply of ammunition, oil and water.

Kit required for each gun team.—Gun fitted with auxiliary mounting and with the barrel casing filled, tripod, two belt boxes and belts with dummies, spare parts box complete, condenser tube * fitted to gun, condenser bag half filled with water, and landscape target.

1st Stage.

The teams will be exercised in all the movements of elementary drill up to and including "Action" and "Out of action," in both the normal and lowest positions. Practice in the use of the auxiliary mounting will also be given. Fire orders should be simple, and alterations in sighting elevation and targets should be practised.

2nd Stage.

In addition to the points mentioned in the first stage, the fire orders should include the use of traversing, searching and combined sights (sec. 21).

3rd Stage.

Before this stage is carried out, immediate action and repairs and adjustments must have been practised in the mechanical training on the gun.

In this stage service targets in the open country will be used.

In addition to the points mentioned in the previous stages practice should be given in :—

- Immediate action.
- Replacing casualties and breakages.
- Ammunition, oil and water supply.

Section 26.—Combined drill—Indirect fire.

In order that a section may work in the field with efficiency the methods of indirect fire must be learnt as a drill. This will enable the personnel in action to reproduce automatically the movements learned in practice, with such modifications as the conditions of battle may impose.

1.—Kit required for each gun team—

- Gun and tripod.
- Bar foresight.
- Belt boxes (4), belts and dummies.
- Condenser tube and bag.

* NOTE.—On all occasions during training, except when firing, a dummy condenser tube should be used to prevent the metallic tube being damaged. The dummy tube can be made by attaching a union joint to a six feet length of half-inch rope.

Clinometer.

Cleaning rod.

Spare barrel and spare parts box.

"T" shaped base, sandbags and shovel.

Two posts—the "zero post" and the "aiming post" (these should be of different colours).

A shutter is also required for controlling fire

Guns and tripods will be laid out as in Elementary drill. A gun commander will be appointed for each gun.

2.—"Fall in."

Teams will fall in as in Elementary drill, gun commanders on the right of Nos. 1, teams in line.

The section commander will indicate the reference object (if one is being employed).

3.—"Number."

As in Elementary drill.

4.—"Take post"

As in Elementary drill. No. 3 has with him a condenser bag, four belt boxes, and the posts. No. 4 has the "T" shaped base, shovel, sandbags, spare barrel, and spare parts box. The gun commander takes post on the left of No. 1, and has the cleaning rod, clinometer and bar foresight.

5.—"Tell off by guns."

The gun commanders number off from the right: "No. 1 gun," &c.

6.—"Prepare for action."

No. 1 examines the tripod, and No. 2 prepares the gun (condenser tube fixed) for action. No. 3 inspects the ammunition. No. 4 doubles forward with the "T" shaped base and shovel. Nos. 5 to 8 are spare men, and remain under cover.

The section commander indicates the alignment of the "T" shaped bases, and on his signal Nos. 4 fix the bases firmly in the ground and double to the rear.

7.—The section must now be laid on parallel zero lines. All methods of doing this should be practised. When a reference object is used in front of, or behind the section, the drill will be as follows :—

(i.) "Flank guns—Mount gun."

The flank guns are mounted and laid on each other. No. 2 of each gun notes the reading on the direction dial and signals with his hand to the other No. 2 when this is done. Both guns now lay on the reference object, and the angle swung through is noted. These angles are passed along to the section commander, who then calculates the distribution angle to obtain parallel lines.

(ii.) "Remainder—Mount gun."

The remaining guns are mounted and laid on the reference object. No. 3 of each gun brings up two belt boxes and the condenser bag. Nos. 4, 5 and 6 bring up sandbags and Nos. 2 and 3 ensure the firm bedding of the tripod legs. No. 2 places the condenser tube inside the bag. The gun commander fits the bar foresight on to the gun.

(iii.) The angle of distribution from the reference object necessary to bring all guns on to parallel lines, followed by the angle of switch from the reference object necessary to bring all guns on to parallel zero lines will now be passed to each gun commander, either verbally (para. 20) or in writing.

The angle of distribution will be laid off by means of the bar foresight and the angle of switch by the direction dial.

(iv.) When the gun has been laid on its parallel zero line, the gun commander will adjust the bar foresight to zero. No. 3 will then pace out 10 yards from the cross head and drive in the zero post. In this he will be directed by No. 1, who will adjust the tangent sight slide to bring the line of sight on to the post.

The zero post will not be moved once the gun has been laid on its parallel zero line.

8.—"Stand clear."

The teams will fall in 5 yards in rear of the guns and stand at ease.

9.—"Stand to."

All numbers take up their positions. The gun commander kneels down with the cleaning rod and clinometer on the left of No. 1.

10.—Orders for change of direction from the zero line (if necessary) to engage the first target, followed by the elevation, will be given verbally (see Note 1) or in writing.

Whenever possible these and subsequent orders for changes of direction and elevation should be given in writing in the form of a gun chart.

When the angle of deviation from the zero line does not exceed 7 degrees it can be laid off from the zero post by means of the bar foresight, in which case there will be no need to place out the aiming post.

The gun commander will place the elevation on the gun by means of the clinometer.

When direction and elevation have been placed on the gun, the gun commander will report "No. 1 Gun ready," &c.

11.—"Load."

As in Elementary drill.

12.—"Traverse."

Will be 2 degrees, i.e., 1 degree right and 1 degree left, unless otherwise ordered. No traverse is required for concentration.

13.—Rate of fire.

Slow, medium, or rapid.

14.—"Fire."

The shutter will be lowered. Bursts of fire should not be less than 15–20 rounds. No. 1 relays between bursts, and, unless concentrating, traverses between bursts. *Accuracy in relaying must always be insisted on.*

15.—"Cease fire."

Shutter released.

Procedure after first lift or first belt, whichever is the shorter :—

No. 1 unloads and clears gun.

No. 2 removes the outer casing, tests the muzzle cup, cleans the barrel, and replaces the outer casing.

No. 3 brings up ammunition.

No. 1 oils up, reloads, and lays for direction.

Gun commander puts on elevation.

No. 2 signals "ready to fire."

Procedure after every 1,000 rounds :—

No. 1 unloads and clears gun.

No. 2 cleans the barrel and replenishes the water in the barrel casing, if necessary.

No. 3 brings up ammunition.

No. 1 oils up, reloads, and lays for direction.

Gun commander puts on elevation.

No. 2 signals "ready to fire."

16.—"Unload."

As in Elementary drill. The gun commanders report "No. 1 gun clear," "No. 2 gun clear," and so on.

17.—"Out of action."

The guns will be dismounted at the firing point. Nos. 3, 4, 5 and 6 will double forward and retire with the equipment.

18.—Sections should be practised in coming into action in different positions, obtaining parallel lines by different methods, and firing by charts. In the latter case, verbal orders should be dispensed with as far as possible.

In the final stages of training, section commanders should be practised on the ground from the map of the district in applying the fire of their sections to any target with rapidity and accuracy. Throughout the drill, gun numbers must be changed round frequently.

19.—Practice with ball ammunition should be carried out on a short range. A method of preparing targets for use in this case is as follows :—

(i.) Work out the angles of direction and elevation required for each task. }

(ii.) Place each gun about 20 yards from a white 6-ft. screen. Lay for each task, look along the barrel and note at what points on the target the bullets should strike. Mark these points and the limits of traverse on each target. Sketch in trench lines, strong points, &c.

(iii.) If the exercise is to be carried out by day, a screen should be erected between the gun and target.

In this way the gunners may be rehearsed in firing a barrage which they will later have to fire in an attack.

Attention must be paid throughout to all points of elementary training and drill.

20.—Examples of verbal orders.

The left gun will always be the directing gun.

(a) DISTRIBUTION.

(i.) To obtain parallel lines.

"Distribute 20 minutes."—This is the angle obtained by the section commander in para. 7. The angle 20 minutes has been used simply for the purpose of illustration. The same applies to all other angles. This order will be passed down as follows:—

The gun commander of No. 4 gun repeats the order, and the laying of No. 4 gun is not altered.

The gun commander of No. 3 gun repeats "20 minutes right—Distribute 20 minutes," and No. 3 gun is laid off 20 minutes to the right of the reference object by means of the bar foresight.

The gun commander of No. 2 gun repeats "40 minutes right—Distribute 20 minutes," and the gun is laid off 40 minutes to the right of the reference object by means of the bar foresight.

The procedure for the other gun is similar to the above.

The guns are now laid on parallel lines, and can be swung on to their zero lines as follows:—

"All guns—Degrees right (or left)."

Each gun commander repeats the order and the gun is laid off the given angle from the reference object on the direction dial.

The guns are now laid on parallel zero lines.

(ii.) To engage a target.

"All guns on zero lines."

The gun commander repeats the order. No. 1 lays on the zero post.

"All guns—Degrees right (or left)."

The gun commander repeats the order. No. 1 lays off the given angle on the direction dial. No. 3 paces out 10 yards from the crosshead and, directed by No. 1, drives in the aiming post.

"Distribute 20 minutes."

The procedure is the same as in (i.) except that the aiming post is here used instead of the reference object.

(b) CONCENTRATION. To engage a target.

"All guns on zero lines"—as in (a) (ii.).

"All guns—Degrees right (or left)"—as in (a) (ii.).

"Concentrate 20 minutes."

The gun commander of No. 4 gun repeats the order and the laying of No. 4 gun is not altered.

The gun commander of No. 3 gun repeats "20 minutes left—Concentrate 20 minutes," and No. 3 gun is laid off 20 minutes to the left by means of the bar foresight.

The procedure for the other guns is similar to the above.

(c) ELEVATION.

(i.) **"Elevation 3 degrees."**

Each gun commander repeats the order and lays the gun to that elevation with the clinometer. No. 1 adjusts the tangent sight slide to bring the line of sight on the aiming post and notes the reading on the sight.

(ii.) **"Elevation 4 degrees—Add 20 minutes."**

The gun commander of No. 4 gun repeats the order and lays the gun to 4 degrees with the clinometer. No. 1 proceeds as in (i.).

The gun commander of No. 3 gun repeats "Elevation 4 degrees 20 minutes—Add 20 minutes," and lays the gun to 4 degrees 20 minutes with the clinometer. No. 1 proceeds as in (i.).

The procedure for the other guns is similar to the above.

(iii.) **"Elevation 5 degrees—less 10 minutes."**

The gun commander of No. 4 gun repeats the order and lays the gun to 5 degrees with the clinometer. No. 1 proceeds as in (i.).

The gun commander of No. 3 gun repeats "Elevation 4 degrees 50 minutes—Less 10 minutes," and lays the gun to 4 degrees 50 minutes with the clinometer. No. 1 proceeds as in (i.).

The procedure for the other guns is similar to the above.

Section 27.—Rough ground drill.

The object of this drill is to train the team in bringing the gun into action on rough ground. Practice will be given in mounting the gun on a steep slope, firing in any of the following directions :—

- (i.) To the front or rear.
- (ii.) To the right or left.
- (iii.) Up hill.
- (iv.) Down hill.

The drill should be taught individually by the instructor.

The kit required is the same as for combined drill, except that a belt box carrier is required, but not a landscape target.

The instruction will be divided into two stages as follows :—

1st Stage.

In this stage no targets are indicated, and the use of cover is not practised.

The instructor will show how the tripod is erected for all kinds of slopes and he will point out that :—

- (i.) The rear leg must always point down the slope.
- (ii.) The socket must be upright.
- (iii.) Only the shoes of the tripod must touch the ground.

Each member of the team will then be exercised in erecting the tripod on a different position.

The instructor will then demonstrate the duties of No. 2 by mounting the gun on the tripod so as to fire in the required direction. He will also demonstrate the use of the belt box carrier, and other means of placing the belt box so as to ensure a correct feed.

Each member of the team will then be exercised in mounting the gun on the tripod to fire in different directions. (Plates XVI. and XVII.)

NOTE.—It is **often** more convenient after the tripod has been erected, but before the crosshead is swung round in the direction of the target, to have the gun mounted, and *then* swung round. By doing this, the task of No. 2 is easier than when the gun is mounted *after* the crosshead has been turned.

2nd Stage.

In this stage ranges will be given, targets indicated, and full use made of cover. No attempt should be made to introduce tactical lessons.

Nos. 1, 2, 3, and 4, with the gun, tripod, &c., will be in a position of readiness, not more than 10 yards from the selected gun position. The remaining numbers will be sent out as observers in the direction of the target, and will criticise the movements of Nos. 1 and 2 as regards exposure when coming into action.

The instructor will mark a position, give the range, indicate the target, and then order "Action."

The following points should be criticised after No. 2 has raised his hand to indicate that the gun is in action :—

- (i.) Whether there was any unnecessary exposure whilst the gun was being brought into action.
- (ii.) Whether the gun is properly in action, and all the details of elementary training have been observed.
- (iii.) Whether the fire would clear any existing obstruction.
- (iv.) The correct erection of the tripod, with the rear leg downhill.
- (v.) Whether the tripod had to be altered after the gun was mounted.
- (vi.) The positions adopted by Nos. 1 and 2 as regards exposure and comfort.
- (vii.) The position of the belt box to ensure correct feed.
- (viii.) The position of No. 3 (minimum exposure, within view of the gun, and with ease of ammunition supply).
- (ix.) The position of No. 4.

When the men have made sufficient progress in the above, they should be practised in arranging and clamping, under cover, the position of all three legs (before mounting), so that the socket will be upright when the tripod is mounted on the position indicated.

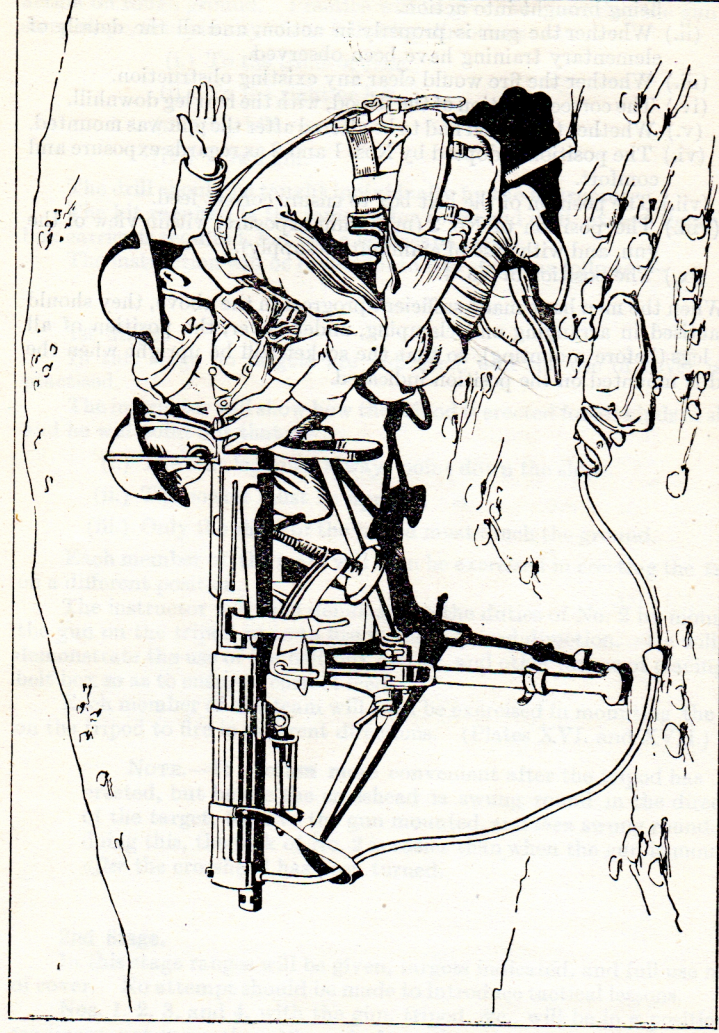


PLATE XVI.—ROUGH GROUND DRILL—GUN FIRING ALONG STEEP SLOPE.



PLATE XVII.—ROUGH GROUND DRILL—GUN FIRING DOWN STEEP SLOPE.

CHAPTER V.

LIMBER DRILL.**Section 28.—General instructions.**

In packing limbers attention should be paid to the following considerations:—

(i.) **TACTICAL.**—These will affect the distribution of the loads both as between each portion and as between the limbers themselves. In the system detailed below all equipment and supplies necessary for the guns being brought into action are carried in the fore portion of the gun limber, and further supplies are carried in the hind portion. If the tactical situation demands rapid action a few gun numbers can ride in the fore portion, the hind portion being unhooked, if desired.

(ii.) **BALANCE OF LIMBERS.**—It is important, if galls on the animals are to be minimised, that the load in each portion of the limber should be well balanced. Also, the fore portion should carry a heavier load than the hind portion.

(iii.) **SPEED IN COMING INTO ACTION.**—In order that the guns may come into and out of action as rapidly as possible it is necessary for all ranks to know exactly where every article is carried, and for the gun numbers to be well drilled in packing and unpacking the gun limbers. A uniform system should be adopted throughout the company, and in every section a corporal should be detailed to supervise the packing of the limbers correctly.

In this chapter, a drill for packing the gun limbers is given. The drill will be carried out at the double. The tailboard of the fore portion should never be lowered when the hind portion is attached and the animals are hooked in.

The pack saddlery will be carried on the off-side animals, with the exception of the hangers and racks (carried in the hind portion of the gun limber), and the water boxes or tins (carried in the fore portion of the gun limber).

When the packs of the officers, warrant officers, N.C.O.s and men are carried on the limbers they should be distributed between all three limbers, the importance of balance being kept in mind.

Section 29.—Packing limbers.

The equipment, as shown in the load tables (gun limber) sec. 31, will be dumped in rear of the limber.

“Fall in.”

The sub-section (excluding drivers) will fall in immediately in rear of the limber, in two ranks.

“Number ”—as in elementary drill.

“Pack limber.”

(i.) **FORE PORTION** (Plates XVIII. and XIX.)

On the command “Pack limber,” the Nos. 1 and 2 double to the dump, take three belt boxes each, and place six on each side of the limber, upright, the side of the box touching the side of the limber, arrowhead pointing inwards.

Immediately the belt boxes are in position the Nos. 3 and 4 place the gun chests on top, one on either side of the limber, hinges towards the sides of the limber.

The Nos. 1 will then follow with the Mark IV. tripods, condensers and condenser tubes, placing the tripods in the centre of the limber, crossheads touching the tailboard, and as close to each other as possible. The condenser bags and tubes will be placed on top of the legs of the tripods.

No. 2 of the right team will bring up two spare parts boxes and place them in the front end of the limber, one on top of the other, slightly to the off side, hinges to the rear. At the same time No. 2 of the left team will bring up two belt boxes and place one on each side of the limber, upright, next to the middle belt box on the floor of the limber.

No. 3 of the right team packs the auxiliary mountings on the floor space, one on each side of the Mark IV. tripods. No. 3 of the left team packs the oil can cases in the space on the near side against the spare parts boxes.

No. 4 of the right team packs the water boxes or tins, upright, against the rear of the spare parts boxes. The other No. 4 packs the trench machine gun bags between the Mark IV. tripods and gun chests, one on each side.

All numbers 1 to 4 of each team place the cover on the limber, the right team on the off-side and the left team on the near side.

(ii.) **HIND PORTION** (Plates XX. and XXI.)

On the command “Pack limber,” No. 5 of the right team places the water drum and hay nets in the front off corner, hay nets on top of the drum. The other No. 5 places the four horse rugs against the front end of the limber, and touching the drum.

No. 6 of the right team brings up the signal pistols, folding saw, periscopes (Vigilant) and bag line gear (filled with mallet, pegs, picketing, &c.), placing the bag line gear in the front near corner, and the pistols, periscopes and folding saw on top of the four horse rugs. At the same

time the other No. 6 will place one canvas rack (containing three belt boxes), lengthways, on the near side of the limber, touching the bag line gear, lids to be against the near side of the limber.

No. 7 of the right team will place the two metal carriers (each containing one belt box) upright, and as far forward as possible on the off side, touching the water drum and horse rugs. The other No. 7 will place one canvas rack on the near side, lengthways, in rear of the one already packed.

The Nos. 8 place two canvas racks as far forward as possible, the ends touching the off-side of the limber.

The Nos. 5 pack two S.A.A. boxes, on end, at the rear of the limber, one on each side.

No. 6 of the right team packs the bullseye lanterns and pickets alongside the canvas racks on the off-side. The other No. 6 packs the tools on the floor space, heads to the rear.

No. 7 of the right team places the horseshoe valise against the S.A.A. box on the off-side. The other No. 7 packs the sandbags on top of the horse rugs, and two canvas buckets on top of the bag line gear.

No. 8 of the right team places the two hangers on top of the metal carriers. The other No. 8 places the two drivers' packs in the centre.

All numbers 5 to 8 of each team place the cover on the limber, the right team on the off-side and the left team on the near-side.

Section 30.—Action from limbers.

“Action.”

On the command “Action,” Nos. 1 to 4 of each team double to the limber (the right team on the off-side, the left team on the near side) and remove the covers from the limber.

The Nos. 1 take the tripods and carry out their normal duties on the command “Action.”

The Nos. 2 and 3 remove the guns from the chests.

The Nos. 3 take out the spare parts cases, and hang them over the shoulders of their Nos. 2, who then double out with the guns and condenser tubes to their Nos. 1.

The Nos. 3 each take two belt boxes, and carry out their normal duties on the command “Action.”

The Nos. 4 half-fill the condenser bags, double out, each with a condenser bag and one belt box, and lie down under cover.

The corporal then moves the limber to cover, the Nos. 5, 6, 7 and 8 accompanying him.

“Out of action.”

On the command “Out of action,” the corporal moves the limber up to the most convenient position for the guns coming out of action, consistent with the safety of the animals.

The Nos. 3 and 4 repack the belt boxes under the gun chests, open the gun chests and tidy the limber.

The Nos. 4 take the condenser tubes off the guns as soon as the Nos. 2 arrive with them.

The Nos. 2 and 3 replace the guns in the chests, close the lids, and the Nos. 2 hand the spare parts cases to the Nos. 3 to replace in the limber.

The Nos. 1 repack the tripods, and the Nos. 4 repack the condenser bags and tubes.

All numbers 1 to 4 of each team replace the cover on the limber, the right team on the off-side and the left team on the near-side.

Section 31.—Load tables.

NOTE.—The following load tables should be considered as a guide only and not as definite instructions, owing to the necessity of adapting the loads to suit local conditions.

Gun Limber—Fore Portion.

Articles	No.	Approximate weight.
		lb.
Bags, trench, machine gun	2	10
Belts, ammunition, in single boxes (filled)	14	294
Boxes, spare parts and tools (filled)	2	44
“ or tins, water (filled)	2	38
Cans, lubricating, No. 9 (filled)	4	6
“ half-pint (filled)	4	4
Cases, cans, oil (also containing spare joint pins, cross-head two, and elevating, two)	2	6
Condensers, steam (bag and tube, with union joint)	2	4
Guns, Vickers, complete, filled with water, each with cork plug, muzzle protector, cleaning rod and spare barrel, in chests	2	160
Mountings, auxiliary	2	16
“ tripod, Mark IV., with dials	2	104
Rifles of two drivers, with covers	2	20
Load, fore portion ... ..	...	706

NOTE.—When the section is on the march, the clinometers will be carried by the gun commanders.

Fighting Limber—Hind Portion.

Articles.	No.	Approximate weight.
Axes, pick, heads and helves	2	lb. 12
Bag, line gear (containing mallet, brushes, rubbers, etc.)	1	15
Bags, sand, common... ..	30	12
Belts, ammunition, in single boxes (filled)	14	294
Cartridges, S.A.A. ball	2,000	150
Buckets, water, G.S., canvas	2	1
Carriers, ammunition belt box	2	10
Drum, oil, containing spare supply of water (filled) ...	1	37
Hangers, gun and tripod	2	17
Lanterns, bullseye, and iron pickets	2	10
Nets, hay	4	2
Packs of two drivers	2	30
Periscopes, No. 18 (Vigilant)	2	($\frac{1}{2}$)
Pistols, signal, 1 in.	2	4
Racks, boxes, ammunition in belt... ..	4	24
Rugs, horse	4	40
Saws, folding, complete	1	2
Shovels, G.S.	2	7
Shoes, horse or mule, with nails, in valise	8	12
Load, hind portion ... ..	...	679
„ fore portion ... ..	...	706
Total load ... ..	...	1,385
Wagon, limbered, G.S., equipped ... ..	...	1,262
Total loaded fighting limber ... ..	...	2,647

Ammunition Limber—Fore Portion.

Articles.	No.	Approximate weight
Bar, supporting draught pole, No. 3 (spare)	1	lb. 10
Cartridges, S.A.A. ball	7,000	525
Cartridges, ball, pistol, Webley (reserve)	156	8
Kettles, camp, oval, 12 quarts	4	36
Machine, filling belt, in chest	1	42
Swingletree, No. 13 (spare)	1	7
Ride of driver, with cover	1	10
Load, fore portion ... ..	...	638

Ammunition Limber—Hind Portion.

Articles.	No.	Approximate weight.
Axe, felling, curved helve	1	lb. 4
Bag, line gear (containing mallet, brushes, rubbers, etc.)	1	12
Buckets, water, G.S., canvas	2	1
Cartridges, S.A.A. ball	7,000	525
File, regular cut, 12 in., with handle, middling	1	1
Hooks, bill	1	3
Knives, opening tins	2	1
Megaphone, 10 in.	1	1
Nets, hay	2	1
Packs of section officer and driver... ..	2	30
Periscope No. 18 (Vigilant)... ..	1	$\frac{1}{2}$
Rugs, horse	3	30
Shoes, horse or mule, with nails, in valise	4	6
Stand, signalling, telescope	1	4
Load, hind portion ... ..	...	619
„ fore portion ... ..	...	638
Total load ... ..	...	1,257
Wagon, limbered, G.S. equipped ... ..	...	1,262
Total loaded ammunition limber ... ..	...	2,519

NOTE.—If a Barr & Stroud range-finder is issued to the section, the case may be carried in the ammunition limber—hind portion. When the section is on the march, the instrument will be carried by one of the gun team; it should on no account remain on the limber, as the jolting will cause it to become out of adjustment. The case is provided for the care of the instrument when not on the move.

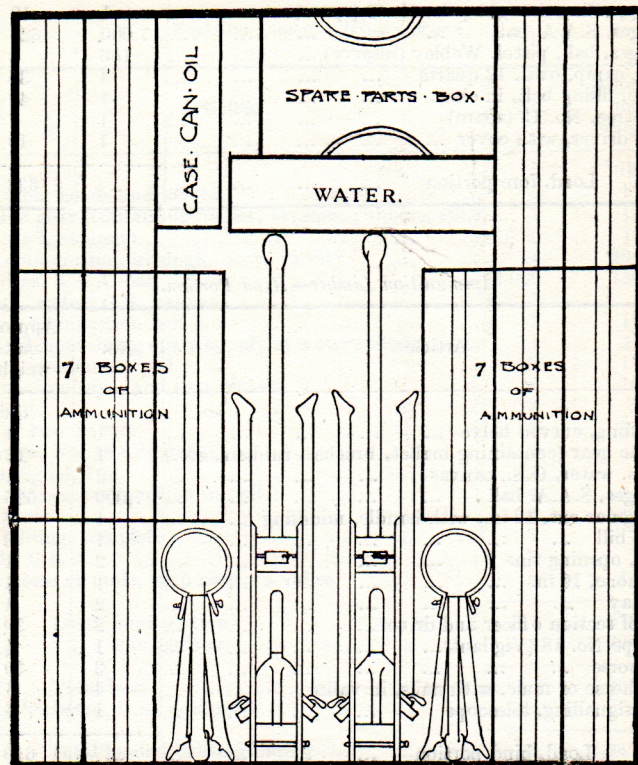


PLATE XVIII.—GUN LIMBER—FORE PORTION—BOTTOM LAYER.

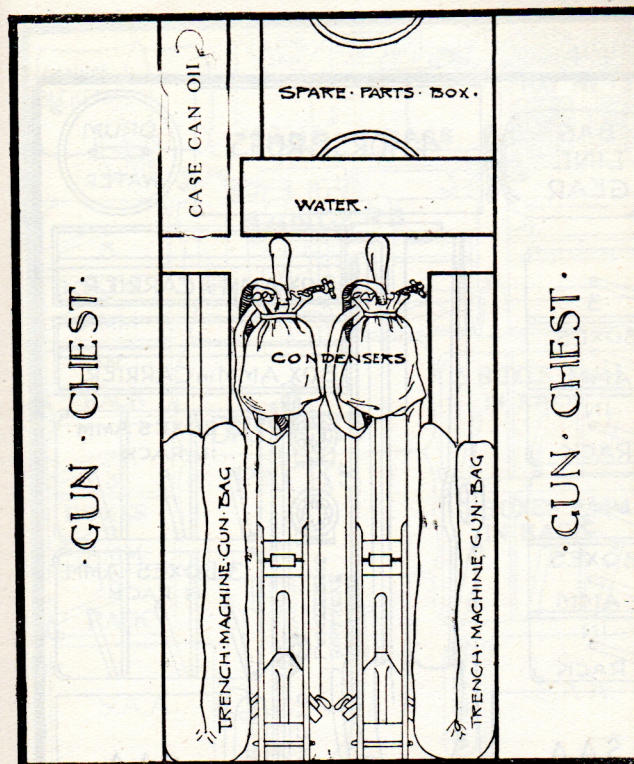


PLATE XIX.—GUN LIMBER—FORE PORTION—TOP LAYER.

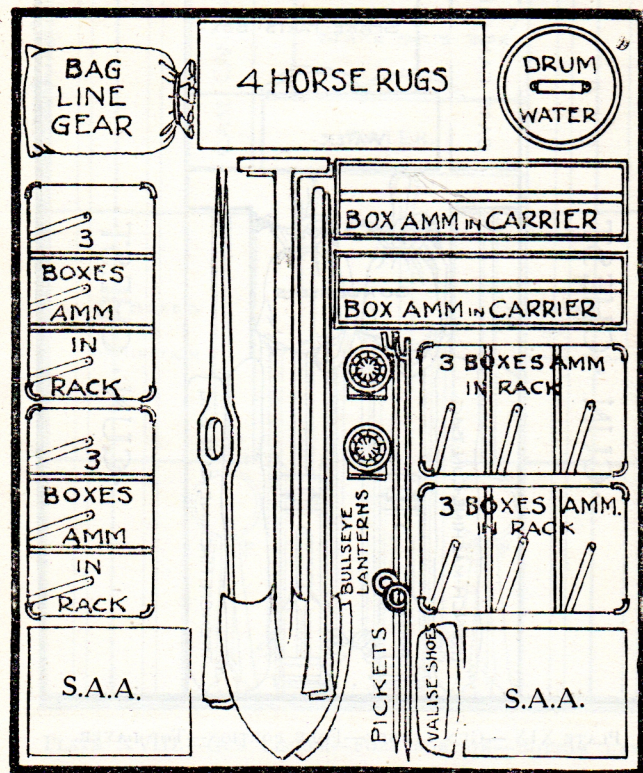


PLATE XX.—GUN LIMBER—HIND PORTION—BOTTOM LAYER.

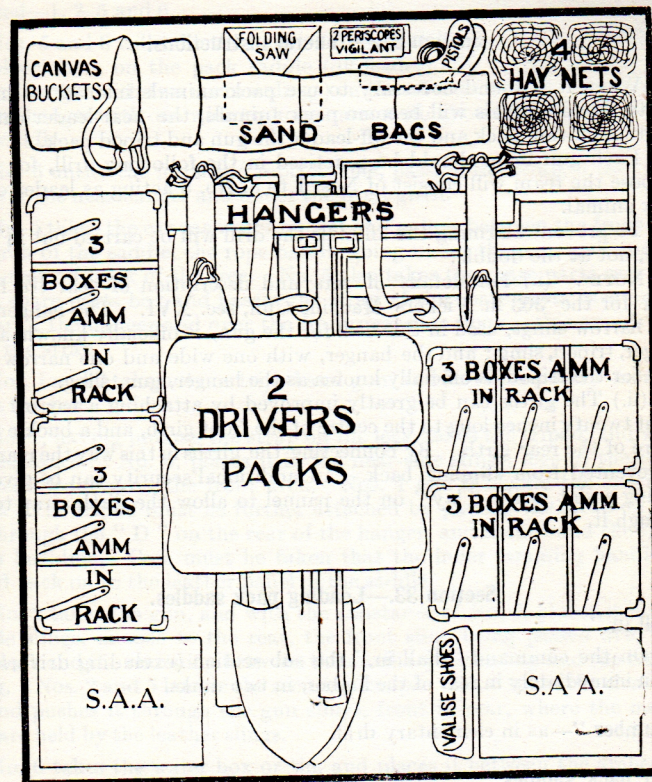


PLATE XXI.—GUN LIMBER—HIND PORTION—TOP LAYER.

PACK SADDLERY DRILL FROM LIMBERS.

Section 32.—General instructions.

When it is found necessary to use pack animals instead of limbers, the two lead animals will become pack animals, the near-leader carrying the ammunition pack and the off-leader the gun and tripod pack.

Each gun team should be practised in the following drill, for which purpose the team will consist of Nos. 1 to 8, No. 8 acting as leader of one pack animal.

To prevent alarming the animals the drill will be carried out in quick time, not at the double.

NOTES.—(i.) For details of sets and description of gear see Handbook for the '303 in. Vickers' Machine Gun, sec. XVI. The hanger with two narrow slings, used in this drill for the gun, is officially known as the hanger, tripod, sling; and the hanger, with one wide and one narrow sling, used for the tripod, is officially known as the hanger, gun, sling.

(ii.) The girths can be greatly improved by attaching a narrow strap about twenty inches long to the centre of the front girth, and a buckle to the centre of the rear girth. By connecting the girths in this way the rear girth is prevented from slipping back. An additional security can be given by cutting a slot in the "lay" on the pannel to allow the girth strap to pass through it.

Section 33.—Loading pack saddles.

"Fall in."

On the command "Fall in," the sub-section (excluding drivers) will fall in immediately in rear of the limber, in two ranks.

"Number"—as in elementary drill.

"On pack saddles."

On the command "On pack saddles," the drivers of the fighting limbers move up and unhook the leaders, No. 8 moves up and holds the leaders. The brakesman puts on the brake, moves up and holds the wheelers. The driver of the near leader takes off his own saddle, blanket, breeching, traces and breast collar, and places them in the front portion of the limber. The driver of the near-wheeler takes off the pack saddle, two feeds and blanket from the off-wheeler, and puts the feeds in the rear-portion of the limber; with the assistance of the other driver he puts the saddle and blanket on the near-leader, takes off the breeching, traces and breast collar from the off-leader, and puts them in the front portion of the limber.

At the same time Nos. 1 and 2 take off the cover of the front portion, and Nos. 3 and 4 the cover of the rear portion of the limber, and all the gun team, employed as below, remove the necessary gear and equipment required for the packs, so that the drivers can place their harness in the limbers.

(i.) GUN AND TRIPOD PACK (Plates XXII. and XXIII). Numbers required—1, 2, 5 and 6.

Nos. 5 and 6 will take the hangers from the rear portion of the limber, and place them on the pack saddle (off-leader), No. 5 placing the gun hanger (hanger with two narrow slings) on the off-side and No. 6 the tripod hanger (hanger with one wide and one narrow sling) on the near-side of the pack saddle.

No. 6 unties the feeds and replaces one, passing the strap of the nose-bag over the near hanger and under the front girth.

No. 5 takes the canvas water bucket and puts it between the front and rear arch of the saddle, the rope handle going under the rear arch and on to the rear off-hook of the tree. No. 5 also takes the spare parts case out of the spare parts box and passes the strap of the spare parts case under the bar of the hanger and over the front near side hook; this avoids undoing the strap.

Nos. 1 and 2 take out one tripod and gun, and fix the auxiliary mounting on the gun.

No. 1, having undone the strap on the legs, takes the tripod, and with the assistance of No. 6, places it in the near-side slings, legs to the rear, crosshead leaning on the front arch. Nos. 1 and 6 buckle the securing straps. The tripod must be further attached by passing the strap on the legs through the "D" on the rear of the hanger, and then round the sling before buckling. Care must be taken that the inner jamming handle is turned back on to the leather panel of the saddle.

No. 2 takes the gun, and with the assistance of No. 5, places it in the off side slings, muzzle to the rear, the front sling being passed over the feed block and the rear sling between the auxiliary mounting and the barrel casing. Nos. 2 and 5 buckle the securing straps. No. 5 takes the cleaning rod and pushes it through the gun slings, front to rear, where the metal rings are held by the leather slings.

No. 6 takes the water box or tin, and places it between the arches of the saddle.

The Nos. 1 and 2 fix the straps, long and short, which are on the bars of the hangers, round the tripod legs and gun respectively, and buckle them on to the belly bands.

(ii.) AMMUNITION PACK (Plate XXIV.). Numbers required—3, 4 and 7.

No. 7 takes a canvas water bucket and puts it on as above, and places the other feed from the off-leader on top of the saddle, resting between the front and rear arches, and strapped round the centre of the rear arch.

Nos. 3 and 4 take a full ammunition rack each and hang them on to the hooks, the metal "D" on the bottom of the rack being nearest to the animal, and the lids of the boxes being away from the animal.

They now fasten the steadying strap (leather girth), each end, when long enough, being passed through the slot in the "lay on" of the pack saddle, through the metal "D" on the rack and then buckled.

No. 3 takes the oil can case and places it between the arches of the saddle, with the strap round both arches.

No. 4 places the condenser tube and condenser bag in the centre of the saddle, securing the sling to the front arch. The condenser tube can be fixed on the gun in the "ready position," if required.

Wire cutters, if likely to be required, should be carried attached to the front arch of the pack saddle. Both packs are loaded simultaneously.

The gun team can now move off, the leading driver leading the ammunition pack animal, and No. 8 the gun and tripod pack animal.

"Off pack saddles."

On the command "Off pack saddles," the reverse procedure will be adopted.

Section 34.—Action from pack saddles.

"Action."

On the command "Action," the gun numbers will carry out their duties as for the command "Off pack saddles," combined with their normal duties on the command "Action." They will only remove those articles which are actually required from the packs.

The driver and No. 8 will assist each other to secure all loose gear and straps after the gun team moves off.

In the case of ammunition packs, care will be taken that the same number of belt boxes are removed from each rack, so that the remainder of the load is balanced.

Section 35.—Load tables.

NOTES.—The following Load Tables should be considered more in the nature of a guide than as definite instructions, owing to the necessity of adapting the loads to suit local conditions.

It is most essential that the weights be kept as equal as possible on each side. If, for example, the nosebag be empty or the barrel casing be not full of water, or some belt boxes have been emptied, these facts should be taken into consideration and weights adjusted accordingly.

GUN AND TRIPOD PACK.

Near side.	lbs.	Centre.	lbs.	Off side.	lbs.
Tripod, with dials ...	52	Water... ..	19	Gun, with barrel casing filled ...	42
Hanger, gun, sling...	9	Bucket, canvas ...	1	Hanger, tripod, sling	8
Nosebag (with feed)	8	Case, horseshoe (filled)	3	Auxiliary mounting	8
				Spare parts case ...	8
				Cleaning rod ...	1
Total	69	Total	23	Total	67

Recapitulation of weights.

	lbs.
Near side... ..	69
Centre	23
Off side	67
Packsaddle and blanket	34
	193

AMMUNITION PACK.

Near side.	lbs.	Centre.	lbs.	Off side.	lbs.
3 boxes, belt (single)	63	Case, can, oil ..	8	3 boxes, belt (single)	63
Rack (canvas) ...	6	Bucket, canvas ...	1	Rack (canvas) ...	6
		Nosebag (with feed) ..	8		
		Case, horseshoe (filled)	3		
		Condenser tube and bag... ..	3		
Total	69	Total	23	Total	69

Recapitulation of weights.

	lbs.
Near side... ..	69
Centre	23
Off side	69
Packsaddle and blanket	34
	195

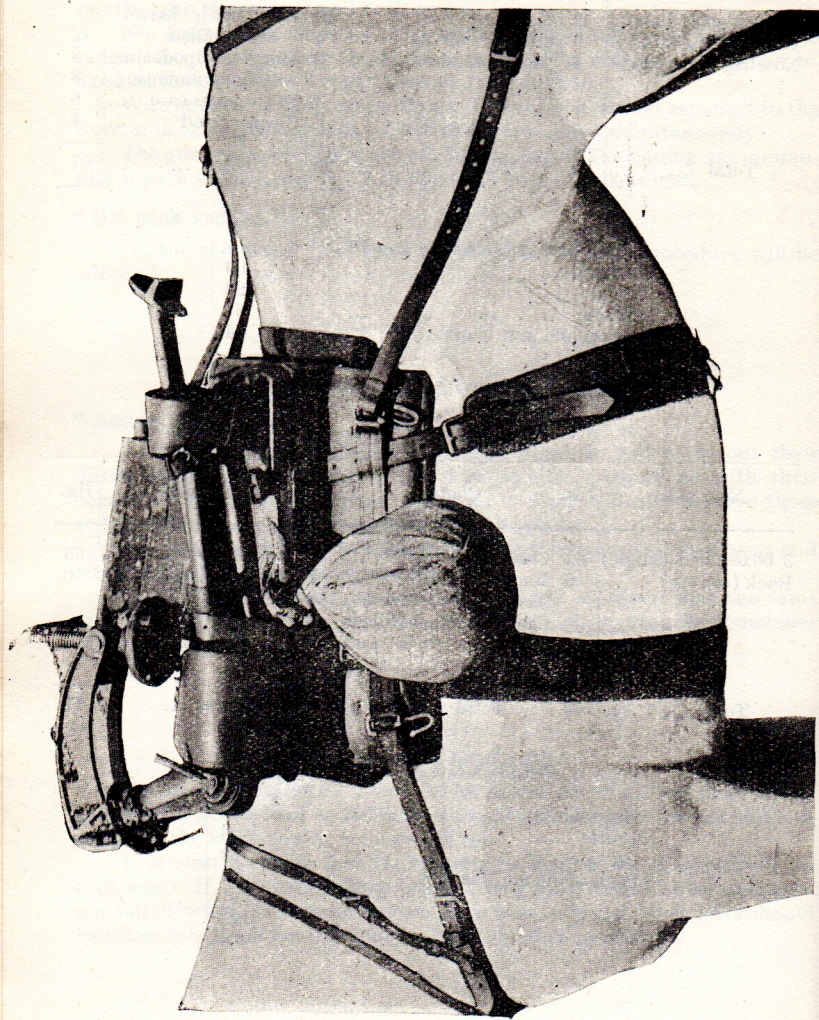


PLATE XVII.—PACK SADDLE—GUN AND TRIPOD PACK—NEAR SIDE.

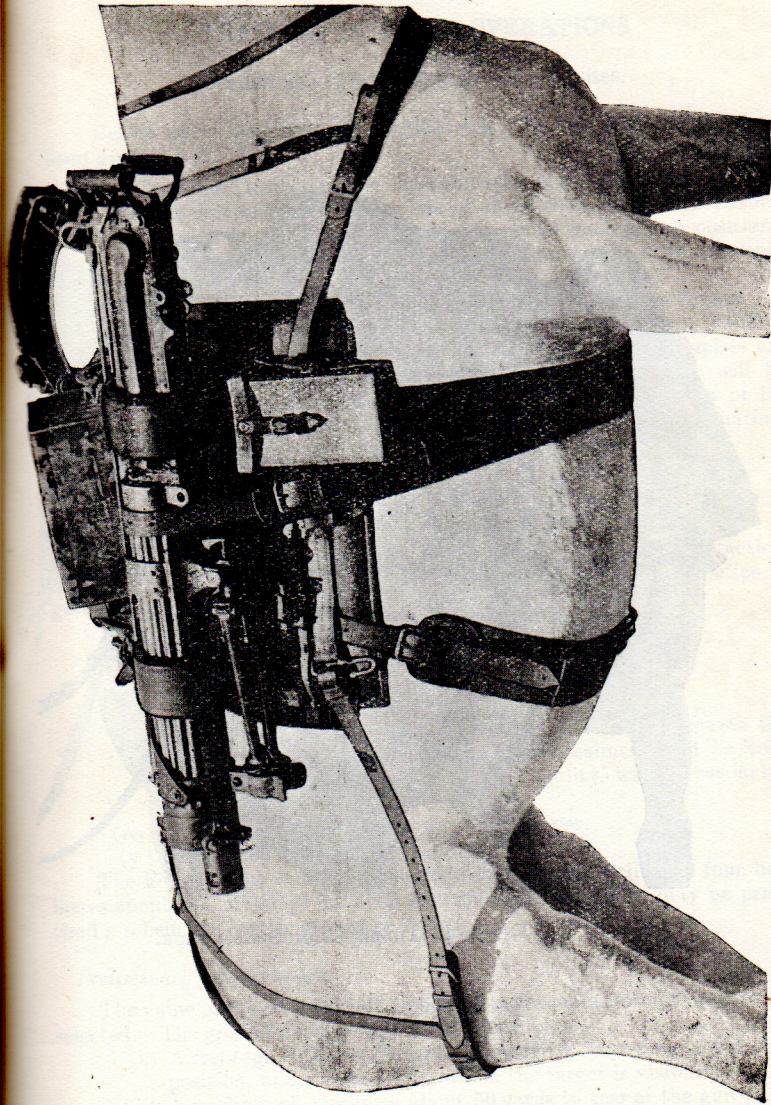


PLATE XXIII.—PACK SADDLE—GUN AND TRIPOD PACK—OFF SIDE.

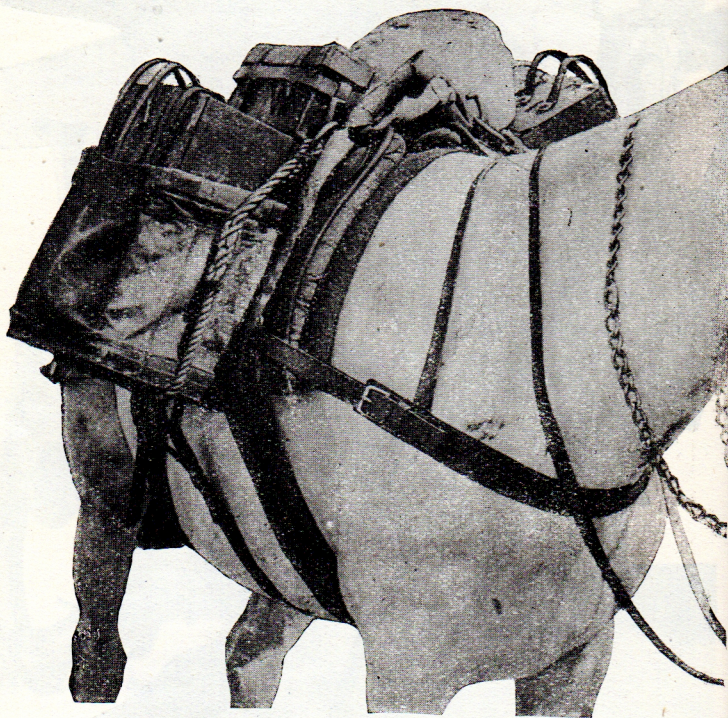


PLATE XXIV.—PACK SADDLE—AMMUNITION PACK.

CHAPTER VII.

TRAINING IN FIELD OPERATIONS

Section 36.—Elementary tactical exercises.

Before these exercises are carried out the following should have been given:—

- (i.) A short lecture on the characteristics of the machine gun.
- (ii.) A demonstration in the use of cover from view, both natural and artificial, followed by practice in concealing gun positions.
- (iii.) A short lecture on reconnaissance, especially with reference to the selection of gun positions.

(For the above, *see* The Tactical Employment of Machine Guns.)

These exercises will include all the details of training which a machine gun section should receive from the section officer. If the exercises are carefully prepared and executed, the section officer on service will be relieved from the necessity of supervising the detailed execution of his orders, and will be left free to devote his attention to the general situation, while retaining control of the movements and actions of his guns.

The exercises will be divided into two stages as follows:—

1st Stage.—Exercise with one gun.

This stage forms a link between rough ground drill and the tactical handling of machine guns in the field. It is designed to give practice to gun numbers in the following:—

- (i.) Reconnaissance.
- (ii.) The use of cover in:—
 - (a) The approach to the gun position.
 - (b) The gun position itself.
- (iii.) The method of approach to the gun position as regards the carrying of the gun, tripod, &c. Concealment will be considered of greater importance than rapidity, within reasonable limits.
- (iv.) Provision of a chain of supply under cover.
- (v.) Proficiency in rough ground drill.

The kit required is the same as for rough ground drill, but four belt boxes should be provided in order that ammunition supply may be practised; a belt box carrier should be used.

Preliminary arrangements.

The value of the exercise will depend upon the suitability of the ground selected. The ground must permit of the following:—

- (i.) A frontage of about 50 yards, containing only one gun suitable position, under cover, from which the target is visible.
- (ii.) A position of readiness about 50 yards in rear of the gun position.
- (iii.) A covered line of approach.

- (iv.) A position about 100 yards to a flank from which the target is visible.

The target must be of a service character, and have a different aspect from positions (i.) and (iv.). It should be reasonably difficult to recognize from the gun position.

The exercise will be carried out as follows :—

- (i.) Explain the objects of the exercise to the section.
- (ii.) March the section to the position of readiness.
- (iii.) Detail Nos. 1, 2, 3 and 4 to each of the four guns.
- (iv.) Detail an officer or N.C.O. to accompany each team and to note criticisms on the actions of the various gun numbers.
- (v.) Define the limits within which the teams may manoeuvre.
- (vi.) Order Nos. 2, 3 and 4 to remain at the position of readiness, and march the remainder, including Nos. 1, to position (iv.) described above.
- (vii.) Call up Nos. 1, give the range, indicate the target, and order them to return to the position of readiness and await orders.
- (viii.) Give the range and indicate the target to the remainder of the section. Observers should be sent out to note the visibility of the gun and team in approach, in mounting, and in action. The remainder of the section should follow and criticise the gun teams from a flank.
- (ix.) Signal "Action" to the first gun team.
- (x.) After the gun is in action, the supervising officer will call for criticisms, in turn, from the observers, the remainder of the section, and the officer or N.C.O. detailed to accompany the team.

Points for criticism.

- (i.) Whether No. 1 before starting gave the remainder of the team the range and a full description of the target, so that it might still be engaged should he become a casualty.
- (ii.) Whether No. 1 made a careful reconnaissance, keeping under cover, and selected the position from which the target is visible.
- (iii.) Whether No. 1 indicated the target to the remainder of the team from a position under cover (but not at the gun position) if this was possible.
- (iv.) The actions and positions of the other numbers, especially as regards the use of cover and the chain of supply.
- (v.) Whether all the points of elementary training and rough ground drill were correctly carried out.

The same procedure will be carried out with each team of the section in turn. Occasionally the No. 1 should be made a casualty during his advance to the gun position.

This stage should be practised subsequently over different ground, and the gun numbers changed round.

2nd Stage.—Exercise with two guns.

In this stage an entire sub-section is exercised on the same progressive lines as teams in the preceding stage. All ranks will be exercised in their

respective duties. The general situation must necessarily be somewhat amplified in order to employ scouts and rangetakers in a realistic manner. Ranges should actually be taken. If a limbered wagon is not available it should be represented by a hand-cart, with a corporal in charge.

Ammunition supply will be carried out, empty boxes being passed back for refilling. The replacement of casualties and breakages will be practised, but this must not be carried to an extreme. The points to be attended to in the previous stage should be carefully observed. As proficiency increases, practice should be given in exercises which require rapid action such as changes of targets and changes of gun positions to meet surprise situations.

Preliminary arrangements.

The position of readiness should be at least 300 yards from the gun position, and should be selected with a view to making more difficult the advance, reconnaissance, and selection of gun positions. The frontage should be about 200 yards wide, and should contain several possible gun positions.

The exercise will be carried out as follows :—

- (i.) Explain the objects of the exercise to the section.
- (ii.) The complete sub-section will fall in at the position of readiness.
- (iii.) Detail an officer to accompany each team and note criticisms. Observers should be sent out as in the first stage.
- (iv.) The supervising officer will take out the scout, explain to him a simple situation and indicate the target.
- (v.) Signal the sub-section to advance.
- (vi.) Order the scout to return and report the situation, &c., to the sub-section officer.
- (vii.) If the situation demands rapid action, the time should be taken from the return of the scout until the sub-section is in action.
- (viii.) Explain the situation to the other sub-section, which should watch the exercise.

Points for criticism.

- (i.) THE OFFICER.—Whether he appreciated the position accurately and quickly, and decided rapidly upon a course of action.

Whether he explained the situation to the sub-section before starting his reconnaissance, and what orders he gave.

Whether he took forward with him his scout and rangetaker, and also his serjeant if he thought fit.

The nature of his reconnaissance and the approximate positions selected for the guns and for the limber, and what action he took as to the selection of alternative positions

The fire orders given and the fire control.

- (ii.) THE SERJEANT.—Whether he selected the exact gun positions with due regard to cover and field of fire, and his subsequent actions.
- (iii.) THE CORPORAL.—Whether in the absence of orders, he halted the limber as near to the gun positions as cover would permit.

Whether he made arrangements for keeping in touch with the guns, and for supply.

- (iv.) **THE SCOUT.**—The report he made; his use of cover when bringing up the sub-section; whether he observed the movements of the enemy and of our own troops; and his subsequent actions.
- (v.) **THE RANGETAKER.**—The position from which he took ranges; his exposure while doing so; the range card made; and whether he subsequently tried to observe fire.
- (vi.) **THE GUN NUMBERS.**—The points of criticism (iv.) and (v.) as in the first stage.
- (vii.) The time taken to come into action, when the situation renders this important.

Subsequent training in this exercise should be given to each sub-section over different areas. The gun numbers should be changed round on each occasion.

Section 37.—Advanced tactical exercises.

1. The elementary tactical exercises should be followed by more advanced exercises in which the section will be practised over wider areas in the various operations of war. Before each exercise is begun the section officer will explain its purpose and the principles that will be followed in carrying it out, and, on its conclusion, detailed criticism will be made. In this way the rank and file should gradually be trained in elementary tactical principles, and their initiative encouraged and developed along sound lines.

2. Attention should be paid in every exercise to the general principles of machine gun employment (*The Tactical Employment of Machine Guns*) and also to the following points:—

- (i.) **USE OF LIMBERS.**—The fullest possible use should be made of limbers for the rapid conveyance of guns and men. In open warfare machine guns will often be required to act ahead of the main body of the infantry, in order to grip on to tactical points already gained by advanced troops. It will often be necessary for machine guns to move faster than the infantry—for instance, a machine gun company, marching near the head of the main guard of an advanced guard, may be required to push ahead and hold ground to cover deployment. Similarly, during “bounds,” when infantry have gained an objective, machine guns are required to push on quickly to that objective. On such occasions where the ground is suitable, and the tactical situation permits, limbers should be used for the rapid conveyance of guns and men.

Where the line of approach is concealed from the enemy, limbers should be brought up as close as possible in the first instance. But as soon as the limbers have been unloaded they should be sent back to a suitable position far enough away to avoid shell-fire directed at the guns. On the other hand, if safe cover (such as a quarry or very steep slope) exists close behind the gun position the limbers may remain there.

In a situation where it is absolutely essential to get into action without a moment's delay, and where the nature of the ground permits of no alternative, limbers should be driven boldly up to the gun position, quickly unloaded, and as quickly driven away to suitable cover.

- Limbers must not bunch together. They should be kept at least 40 yards apart whenever they are on ground which may be subjected to hostile fire. Touch must be kept between the limbers and the guns when the latter are in action.
- (ii) **DRILL.**—Drill must not be divorced from tactics. After the gun position has been selected and the order has been given to bring up the guns, application of drill is required in getting the guns into action. The danger of the teams bunching together when advancing from the limbers to the gun position, which may be partly due to the bunching of limbers mentioned above, must be avoided.

Broadly speaking, except in the case of a fleeting target, when it will be expedient to open fire at once with the first gun to get into action, a section commander will wait until all his guns (or at any rate three of them) are ready to open fire before he gives the signal to do so. A systematic arrival of the various numbers at the gun position should be aimed at. Undue haste, which will only lead to confusion, should be avoided. Teams must be well under control when going into action, and such control should be exercised by the N.C.O. at the limbers. There is need for quick action, but it must not be allowed to degenerate into a scurry, and there should be no shouting.

Generally speaking, crawling should be confined to movement over the last few yards in approaching a position. When longer distances must be covered, in possible view of the enemy, it is better to make a bold dash right up to the gun position, simulating the movement of infantry as much as possible.

Officers must constantly practice giving fresh fire orders and switching their guns from one target to another. Nos. 3 and 4 must actually go through the movements for replenishment of ammunition, &c.

- (iii.) **PROTECTION.**—The principle that every unit is responsible for its own protection, must be impressed upon all ranks, and practice must be given in the methods of protection to be employed. The measures against surprise which have been taken when the guns are on the move must not be relaxed when the guns are in action. Protection of the flanks is of special importance, and a sentry must always be posted to watch any locality from which the gun position may be turned.
- (iv.) **FIRE AND MOVEMENT.**—Although the principle that, during the attack, movement should be covered by fire, does not apply so much to the movement of machine guns as to the action of infantry in the fire fight, nevertheless, this principle must be thoroughly understood and often applied by machine gun officers. Methods must, of course, be adapted to the tactical situation at the moment, and to the task in hand,

But, in many situations, where two sections are detailed to act together, and it becomes necessary to move from one position to another, one section should move, covered by the fire (if necessary) of the other section. The latter should only leave the original position when the section which moved first is in the new position. The same method also applies to sub-sections, acting singly, and should generally be adopted by a group of machine guns which has been detailed for the protection of a flank, in addition, perhaps, to other duties.

- (v.) Formations to be adopted in battle (Infantry Training, sec. 118)
- (vi.) Chain of supply, dumps, &c.
- (vii.) Communication, both by signal and runner.
- (viii.) Fire orders and fire control.

3. The more realistic the scheme, the greater will be the impression made by the lessons learnt. Whenever possible, the enemy should be represented by pole targets, if men are not available. For this reason tactical exercises in the form of Field Practices (sec. 41) are particularly valuable.

4. Schemes should also be framed for the purpose of training machine gun officers in the tactical principles laid down in Field Service Regulations, Part I.; Infantry Training; and The Tactical Employment of Machine Guns. These exercises should be prepared in detail with maps, instructions and points for criticism. They should involve the rapid appreciation of a situation, the selection of the most appropriate method of fire direction, the issue of orders, the sending of situation reports and the rapid preparation of sketch maps. The actual presence of guns on such tactical schemes is of value in order to test, to some extent, the feasibility of the execution of the orders given. Their presence, however, is not essential for the conduct of the exercise.

5. The subsequent training will be carried out whenever possible with other troops. Frequent co-operation between machine guns and other arms is of the utmost importance, for by this means only can all ranks obtain a sufficient knowledge of the tactics of those with whom it will be their duty to co-operate on the field of battle.

In cases when co-operation with the infantry cannot be obtained, officers must train and use their imagination in picturing what their own infantry are doing in the situation with which they are dealing at the moment. Officers directing an exercise must constantly picture to company and section commanders the movements of their own infantry. Training the imagination is of the utmost importance, but it must be based on sound knowledge. The commander who lacks imagination will also lack ability to divine the intentions of his opponents.

Section 38.—Posting and relief of sentries.

1. The object of this instruction is to give practice in :—
 - (i.) Posting and relieving sentries, and Nos. 1
 - (ii.) Relief of sections.
 - (iii.) Coming into action from cover.
 - (iv.) Quick changes to alternative positions.
 - (v.) Duties in case of "gas alert."
 - (vi.) Duties in case of an alarm.

2.—Kit required :—

Gun (barrel casing filled with water) and auxiliary mounting.
 Condenser tube and condenser, half filled with water.
 Mark IV. tripod.
 Two belt boxes (6, if available), belts and dummies.
 Spare parts case.
 Auxiliary aiming mark.
 Clinometer.
 Periscope.
 Range card.
 Sentry order board.
 Machine gun trench bag.
 Water box, or tin.
 Signal pistol (not to be fired near the gun position).
 Box respirators.

3.—Posting and relief of sentries by day.

The following procedure will be carried out when relieving sentries within a gun team :—

The principles involved are identical with those for the posting and relief of a sentry on guard or outpost duty.

By day, one gun number only need be on duty at the gun position ; he is the sentry.

He will always be posted by a N.C.O., who will explain the orders to him, and be certain that these orders are understood. The sentry should be in possession of a periscope.

The tripod and two belts in boxes will be in the position ; the remainder of the team and equipment will be under cover.

The sentry will be given the following details and orders :—

- (i.) Definite orders as to his action in case of attack.
- (ii.) Exact location of all gun positions allotted to his gun, and their numbers or names.
- (iii.) Points shown on the range card, and extent of the front to be watched.
- (iv.) In case of alarm, to warn the commander and team.
- (v.) Standing orders for sentries ; special orders for the gun position.
- (vi.) Special information—i.e., patrols, wiring parties, positions of forward saps, danger from snipers, the position of our own and hostile infantry, &c.
- (vii.) Positions of guns on either flank.
- (viii.) Position of the officer.
- (ix.) Position of the nearest telephone and latrine.

4.—Posting and relief of sentries by night.

By night double sentries will always be posted, one being the No. 1 for the tour of duty. Both will be near the gun and on the look-out.

The gun will be mounted in the position, half loaded and laid on the night line. Four belt boxes and the spare parts case will be in the position.

The posting of the double sentries will be performed by a N.C.O., who will make certain that the sentries understand their orders.

Each No. 1, after being posted, will inspect the gun to make certain that it is in thorough working order and ready to open fire on completion of the loading motion. He will see that all necessary equipment is in place and will be informed of any special fire orders for night firing from the position.

If there is a loophole, he will ascertain whether it has been cleared.

NOTE.—All sentries, both by day and night, will also act as gas sentries.

5.—Relief of sections.

The guide with the relieving section will lead it to the position of the section to be relieved, and report to the commander of that section that the relieving section has arrived.

- (a) The officer in charge of the relieving section will :—
 - (i.) Report to the officer of the section to be relieved.
 - (ii.) Remain with him and receive reports from his N.C.O.s.
 - (iii.) Receive any instructions or information with regard to the situation, other than those he has learnt during his previous reconnaissance.
 - (iv.) As soon as the relieved section has moved off he will go round all his guns and make sure that his gun commanders have carried out their work correctly. At the same time he will see that any special orders he may have issued with regard to work to be done, &c., are being complied with.
 - (v.) Report "Relief complete" to his machine-gun company commander, and to the infantry commander of the trench sector.
 - (vi.) See that his arrangements for communication are on a satisfactory basis.
- (b) The relieving N.C.O. will :—
 - (i.) Ascertain the positions of the guns and the sentries, alternative emplacements, his officer's headquarters, the nearest telephone and the latrine. He will also ascertain the night line for each gun.
 - (ii.) Take over and give a receipt for trench stores.
 - (iii.) Ensure that his No. 1 understands his orders and range card, and show him the alternative emplacements.
 - (iv.) Detail his first sentry, and see that he is properly posted.
 - (v.) Order his No. 1 to mount his tripod (and gun, if relief is by night), and see that this is done correctly.

NOTE.—When the relief is by night precautions must be taken that the incoming gun is laid on the correct line.

- (a) If the tripod of the outgoing gun can be left in position, and the tripod of the incoming gun handed over in exchange, direction can be obtained by laying the incoming gun to the same directional reading; elevation can be put on by the clinometer. If an auxiliary aiming mark has previously been put out, and is visible by night, the incoming

gun can be given the correct direction and elevation by being laid upon it with the stated tangent sight reading.

- (b) If tripods cannot be exchanged, an auxiliary aiming mark may be used as in (i.), care being taken to mount the incoming tripod at the same height as the last one, or the gun may be laid by any of the methods employed in indirect fire.
- (vi.) Report to his officer "Relief complete."
- (vii.) Draw out a duty roster.
- (c) The relieving sentry will ascertain :—
 - (i.) The orders for the sentry as detailed in paras. 3 and 4.
 - (ii.) Whether the gun has been fired during the previous relief.
 - (iii.) If so, at what target, and from what emplacement.
- (d) The officer in charge of the section relieved will not move off until his section is reported closed up and complete.

6.—Duties in case of the alarm "Gas" or "Gas shells."

- (i.) All ranks will adjust their box respirators. The gun and spare parts will be well oiled.
- (ii.) BY DAY.—On the alarm being given, the sentry gives the alarm to the other numbers, takes the gun to the emplacement, mounts it, loads and lays. No. 2 follows immediately with two ammunition boxes (or one double box) and the spare parts case; the remaining numbers stand by in the dug-out. When "stand to" is ordered, the above procedure is carried out by the machine gun teams, except that the gun is only half-loaded.

The loop-hole (if blinded) will have to be cleared before fire can be opened; the actual moment when this should be done depends on the nature of the situation.

- (iii.) BY NIGHT.—On the alarm being given, No. 1 completes the loading motions. The other sentry will waken the other numbers, and return to his post.

Practice should be given in mounting the gun on the auxiliary mounting in alternative positions, to represent the Mark IV. mounting having been destroyed. Practice will also be given with the pivot and ammunition box mountings.

7.—Action during and after a gas attack.

- (i.) During a gas attack :—
 - (a) The gun will be kept firing, or
 - (b) The gun, ammunition boxes, and spare parts case will be completely covered with ground sheets or blankets.
- (ii.) After a gas attack, the gun, its equipment and the ammunition will be thoroughly cleaned. (Handbook for the 303 in. Vickers Machine Gun, sec. V., para. 11.)

CHAPTER VIII.

MACHINE GUN COURSE.

Section 39.—General instructions.

NOTE.—All references to Plates in this Chapter refer to sub-headings of Plate XXV.

1. The Machine Gun Course will not be fired until the machine gunner has passed the tests of elementary training (sec. 24).
2. The machine gunner will not be considered a "trained" gunner until he has qualified in the firing of the Machine Gun Course.
3. The range duties as laid down in Musketry Regulations, Part I., sec. 91, apply equally to the firing of the Machine Gun Course, and must be strictly observed. In addition, the following safety precautions must be taken :—
 - (a) No gun will be loaded until the senior officer present has ordered the practice to begin.
 - (b) Before the red flag is raised at the firing point, signifying cessation of fire, the senior officer present will give the order "Clear guns," when the firer will remove the lock from the lock guides, stand up and report "Gun clear." The lock will remain in this position until the order "Load" is given.
4. Attention is directed to Musketry Regulations, Part I., Chapter VI., paras. 442, 447, 454 and 465 to 470 (both inclusive).
5. The Machine Gun Course is divided into four parts :—
 - Part I.—Instructional.
 - Part II.—Classification.
 - Part III.—Direct fire at long ranges, tests of machine guns or personnel, and demonstrations.
 - Part IV.—Field practices.

PART I.

6. Part I. is instructional, and is carried out on the 25 yards range. As it is the first time a machine gunner fires with service ammunition careful and thorough instruction is necessary throughout. For this reason no time limit is placed upon any of the practices. Each practice will be explained to each man before he fires. The best value will be obtained by criticising each practice while it is in progress, ceasing fire for the purpose, rather than by waiting until the practice has finished before commencing to criticise. At the conclusion of the practice faults should also be pointed out at the target, and the firer told how to correct them.

7. In these practices the firer learns, as he gains experience, to understand thoroughly the peculiarities of his gun and its mounting, and to compensate for them. These points can seldom be learnt without careful instruction and explanation by the section officers. The instructor at the firing point should watch the firer, *not* the target, in order that he may see that all points of elementary training are carried out correctly. The shots on the target will bear witness to any faults that the firer may have committed whilst firing. Instructors must realise that the greatest care

must be taken to eradicate such faults during the firing of Part I., so that the gunner shall not carry them with him, and acquire faulty actions from the commencement of his training. This applies equally to the actions of the No. 2 at the gun. The following are the points to which particular attention must be paid :—

In No. 1 :—

- Inspection of gun and mounting.
- Correct firing position and holding.
- Quick and clear repetition of all orders.
- Quick and accurate loading and laying.
- Correct pressure on the thumbpiece on the signal "Fire."
- Observation of fire : eyes on the target, not looking along the sights, or down at the thumbpiece when firing.
- Attention to "Points during firing."

In No. 2 :—

- Inspection of ammunition and belts.
- Correct service position (not kneeling up).
- Attention given to control signals and to feeding the gun, not watching the target.
- Correct and rapid transmission of signals to "Fire" and "Cease fire."

8. The sighting elevations to be used for the various practices are given in sec. 40. Guns should, however, be harmonised before firing and if the point of mean impact of a group does not strike the target $\frac{1}{2}$ in. to the right of the point of aim, the foresight should be adjusted by the instructor until this condition is obtained. As the accuracy of the first shot of each group fired by a machine gun is not reliable, one wide shot will generally be found when examining a group, and this should be borne in mind by instructors when criticising the results of a practice or when measuring the size of a group.

9. Practices of Part I. may be repeated as considered necessary by the company commander, provided that the total number of rounds allotted to Parts I. and III. is not exceeded. No record of results need be kept, but only the total number of rounds expended by the Company in Part I.

PART II.

10. Part II. is fired on the Classification Range, and a strict time limit is imposed in the Classification Practices. In these, the firer is classified as either a

Marksman gunner,
1st Class gunner,
Qualified gunner,

according to the scores he obtains. The firer should have learnt by this time how to handle his gun, and consequently no help or criticism should be given while he is actually firing. He should be left to his own resources, with the object of developing self-reliance, and confidence in himself and his weapon. The strictest possible discipline must be enforced at the firing point, and as in Part I., all points of elementary training should be carried out correctly. In range work, there is an inevitable tendency for these to be neglected, which can only be checked by the vigilance and care of section officers and instructors.

11. Each practice and the time allowed will be explained clearly to

each man before he fires. After the No. 1 has reported "Gun Clear," the Nos. 1 and 2 will remain standing beside the gun, and any necessary criticism will be made by the instructor. The instructor will then dismiss the No. 1 from the firing point, and will call up the next Number and remind the firer of the object of the practice.

12. In the Classification Practices (9, 10, 12, 13 and 14), fire will be stopped as soon as the time limit is reached. No allowance will be made in these practices for stoppages which are due to causes other than defects of the mechanism, or breakages. The firer will be given time to look over the gun and ammunition belt before each practice is begun.

NOTE.—Should the stoppage be due to a defect in the mechanism, or to a breakage, sufficient time to remedy such stoppage will be allowed, or the practice may be repeated.

13. Points will be allotted in the Classification Practices as follows:—

PRACTICE 9.

For each hit on the target below and including 15: 2 points.
" " above 15: 3 points.

PRACTICE 10.

For each hit on the target: 1 point.
No spaces missed: add 30 points.
One space missed: add 25 points.
Two spaces missed: add 20 points, and so on.
Six or more missed: add 0.

PRACTICE 12.

For each hit on the target below and including 10: 4 points.
" " above 10: 5 points.

PRACTICE 13.

For each hit on the target: 1 point.
No spaces missed: add 50 points.
One space missed: add 45 points.
Two spaces missed: add 40 points, and so on.
Ten or more missed: add 0.

The points allotted to Practice 13 were originally based on a 30 ft. target and 100 rounds. Owing to the reduction of these, the firer will receive one-third of the points obtained by him in this practice as an addition to his score on the above allotment.

PRACTICE 14.

For the first hit on the target: 30 points;
For each subsequent hit on the target: 5 points.

In Practices 10 and 12, the screens should be divided into rectangles by means of vertical lines, invisible to the firer, 20 inches apart. A space means any rectangle which does not contain a bullet mark. A hit on a dividing line to count as most favourable to the firer, but will only count in one rectangle.

In order to be classified as a—

Marksman Gunner, 250 points must be obtained
1st Class Gunner, 200 points must be obtained.
Qualified Gunner, 150 points must be obtained.

Those who obtain less than 150 points will be put back for further instruction.

Careful record of the number of points obtained by each firer in each practice will be kept: also of the number of rounds fired.

PART III.

14. The ammunition allotted to this part will be at the disposal of the company commander, and this may be expended as he considers most beneficial for the efficiency of his machine gun company. Whenever possible, practice should be given in firing at ranges of 1,000 yards and over, by direct fire. No record of these rounds, other than the entry in the ammunition book, except such as are expended for extra practice or bad shots, need be kept, nor should any statement of the method of expenditure be required.

PART IV.

15. FIELD PRACTICES.—These exercises should be carried out between ranges of 600 and 1,200 yards. Five examples of such practices are given in sec. 41. The training of a machine gun company cannot be considered complete until it has fired field practices on a field firing range.

Allotment of ammunition.

	Rounds.
PART I.	
Each officer, non-commissioned officer and man ...	250
PART II.	
Each officer, non-commissioned officer and man ...	470
PART III.	
Each officer, non-commissioned officer and man ...	80
PART IV.	
*Each officer, non-commissioned officer and man ...	100

* These rounds will not be fired individually, but will be expended collectively during field practices.

Summary of practices : Parts I., II., III. & IV.

No.	Nature of practice.	Rounds per man.	Total rounds per man.
PART I.			
1	Grouping	20	
2	Single shot traversing	20	
3	Single shot searching	16	
4	Swinging traverse	50	
5	Oblique traverse	50	
6	Application	40	
7	Stoppages	30	
Total for Practices, Part I.		226	
For repetition		24	
Total for Part I. ... ..		...	250
PART II.			
8	Ranging (400x)	20	
* 9	Application (400x)	30	
* 10	Traversing (400x)	70	
11	Ranging (600x)	30	
* 12	Application (600x)	30	
* 13	Traversing (600x)	70	
* 14	Service application (600x)	50	
15	Oblique traverse (600x)	70	
16	Fire from successive positions	100	
Total for Part II. ... ..		...	470
Total, Parts I. and II. ... ..		...	720
PART III.			
Repetition, Company demonstrations and tests		80	80
PART IV.			
Field practices		100	100
Total for Parts I., II., III., and IV.... ..		...	900

* Classification practices.

Section 40.—Detail of Parts I. and II.

Part I.—INSTRUCTIONAL.

To be fired at 25 yards range. Target : Instructional machine gun target. Mark II. (See Plates 1, 2, and 4.)

GUNS SHOULD HAVE BEEN HARMONISED BEFORE FIRING THESE PRACTICES.

No.	Nature of practice.	Target.	Rounds.	Object of practice and method of conducting.
1	Grouping	Plate XXV. (2a)	20	To teach the importance of the correct holding required for the gun, which should group in a 3-inch ring, one wide shot excepted. The row of figures is used for providing aiming marks, with sighting elevations of 800, 1,100, or 1,300. Fired in 4 groups of 5 rounds each, at different aiming marks. Groups should be on the brown horizontal lines. To teach the "2-inch tap." Single shot loading. The instructor will indicate a figure as aiming mark: 10 shots will be fired traversing to the right, and 10 traversing to the left (fire one shot, tap, &c.), as in elementary drill. Shots should be approximately 2 inches apart: the result of each shot should be criticised. Sighting elevations of 800, 1,100 and 1,300 should correspond to the 3 horizontal lines. To teach automatic manipulation of the elevating wheel. Single shot loading. To teach searching up, the instructor will indicate any of the points a, b, c (Plate 4), with sights adjusted to 1,300. Without altering the elevation of the gun, raise sights to 1,600. Firer will fire a shot, then elevate and fire another shot, continuing to elevate and fire alternately until the sights are aligned on the aiming mark which has been given in the fire order (in this case, the original aiming mark). The effect of each shot can be traced on the sky screen: each shot should be approximately 2 inches vertically above the last. To teach searching down, lay on any one of the points d, e, f, with 1,300 on sights; without altering the elevation of the gun, run sights down to 800, and search until the sights are aligned on the aiming mark, which has been given in the fire order (in this case the original aiming mark). The 2-inch interval between shots at 25 yards will ensure the zones overlapping at all ranges.
2	Single shot traversing	Plate XXV. (2a)	20	
3	Single shot searching	Plate XXV. (2b)	16	

No.	Nature of practice.	Target.	Rounds.	Object of practice and method of conducting.
4	Swinging traverse	Plate XXV. (2a)	50	To teach the correct rate of traversing the gun, with the traversing clamp slightly sticky, against dense linear targets at close range. Fired in 2 traverses of 25 rounds each; the first traverse is fired from the right figure to the centre of the target; the second traverse from the left figure to the centre. Shots to be distributed evenly about 2 inches apart. The first traverse should be criticised before the second is fired.
5	Oblique traverse	Plate XXV. (2b)	50	To teach manipulation of the elevating wheel combined with traversing. The gun is laid on any one of the points <i>g</i> , <i>h</i> (Plate 4), or <i>k</i> , <i>l</i> , according to whether traversing is desired away from or towards the firer. Sights at 1,300: fire should be in bursts of 6 or 7 rounds each, and the firer should correct his elevation by turn of the wheel on observing the effect of his fire on the sky screen. Groups should be evenly distributed along the feature which is being traversed. Rounds unspaced.
6	Application	Plate XXV. (2c)	40	To teach rapid re-laying, correct holding, and observation of fire. Rounds spaced in 4 groups of 10. The instructor indicates the two columns <i>m</i> and <i>n</i> (Plate 4), at sighting elevations 1,300 and 1,350 respectively. The firer then fires at <i>m</i> , and without further orders, immediately re-loads, adjusts sights at 1,350, re-lays and fires at <i>n</i> . In both cases he should observe the results of his fire on the sky screen, and correct his elevation by turn of the wheel, if necessary, before completing each group of 10 rounds. After criticism, the procedure is repeated, columns <i>p</i> and <i>q</i> being indicated with sights at 1,400 and 1,300 respectively. The sighting elevations given should bring shots into the respective sky screens.
7	Stoppages	...	30	To teach rectification of stoppages with ball ammunition. Using 30 rounds of S.A.A., belts are prepared beforehand with 7 stoppages per firer, viz.: separated case; miss-fire; bad fault in feed; bent brass strip; thick rim (specially made); 2 successive miss-fires. The instructional target must not be used; any form of aiming mark may be employed that will enable the accuracy of the firer's re-laying to be checked.
Total rounds Repetition	...	...	226 24	

Total for Part I.

PART II.—CLASSIFICATION.

No.	Nature of practice.	Nature of target.	Range Yds.	Rds.	Time secs.	REMARKS.
8	Ranging	Screen 6 ft. square. (See Plate XXV.(3))	400	20	...	Fixed sights. Ranging fire should be carried out against a bank of earth adjacent to the target, if possible. In this practice each man has the opportunity of sighting his gun on the open range before the classification practice.
9	Application	Do.	400	30	10	Fixed sights. Only shots within the 5 ft. square count.
10	Traversing	Screen 3 ft. high, 20 ft. long.	400	70	30	Fixed sights. Gun to be traversed by groups from right to left: the firer is required to traverse the target with the rounds allotted within the time limit, without restrictions as to traversing backwards.
11	Ranging	Screen 6 ft. square. (See Plate XXV.(3))	600	30	...	See practice 8. Tangent sight used.
12	Application	Do.	600	30	15	Tangent sight used. All shots on the screen count.
13	Traversing	Screen 3 ft. high, 20 ft. long.	600	70	30	Gun to be traversed from left to right: tangent sight used. Other conditions are the same as for practice 10
14	Service application	Equilateral triangle of 4 ft. 6 in. sides, mounted on pole. (See Plate XXV.(3))	600	50	30	The gun is loaded, and the firer is given the range. He is pointed out limits between which his target will appear: these limits should be about 30 yards apart. The triangular target is hoisted at any spot and at any height between these limits on signal from the firing point. Exposure 30 seconds, after which the target disappears. Timing is done in the butts. The firer lays and fires immediately the target appears, and observes his fire. This practice exercises the firer in quick laying and application on to a difficult target which suddenly appears at any spot.

No.	Nature of practice.	Nature of target.	Range Yds.	Rds.	Time secs.	REMARKS.			
15	Oblique traverse	20 falling iron plates arranged diagonally on a frontage of 36 ft. in two rows at an angle of 90° to each other.	600	70	60	The firer lays on the left or right bottom edge of the row of plates, and traverses up and down the rows. Fire should be in bursts of about seven or eight rounds each. Fire from the prone position. If iron plates cannot be obtained, two 3 ft. by 10 ft. screens should be placed diagonally up the butts.			
16	Fire from successive positions	8 iron plates (painted white) arranged on the stop butt as follows :— <div style="display: inline-block; vertical-align: middle;"><table style="border-collapse: collapse; text-align: center;"><tr><td style="border: 1px solid black; padding: 2px;">8</td></tr><tr><td style="border: 1px solid black; padding: 2px;">7 6 5</td></tr><tr><td style="border: 1px solid black; padding: 2px;">1 2 3 4</td></tr></table></div>	8	7 6 5	1 2 3 4	600 to 400	100	...	The belts will be spaced in groups of 40 rounds, 30 rounds and 30 rounds. Start 700 yards (approximately) from the butts. Nos. 1, 2, and 3 fall in with gun and auxiliary mounting, tripod and ammunition, as for Elementary Drill. The Supervising Officer will mark three positions from which fire is to be opened. On his signal, the gun, &c., will be carried forward at a steady double, and fire opened from the first position without further orders. Fire will be continued until the first group of 40 rounds is fired, irrespective of the number of plates knocked over. When all firers have ceased fire, the signal to advance to the next position will be given, where the next group of 30 rounds will be fired. When all firers have ceased fire, the signal to advance to the next position will be given. On this occasion the tripod will be left where it is, and will be taken charge of by No. 3, whilst Nos. 1 and 2 will advance with the gun. The last group of 30 rounds will be fired with the gun on the auxiliary mounting. The objects of this practice are to emphasise the lessons of elementary training as regards quick and correct mounting of the gun. Also to exemplify the principle of maintaining fire until effect has been obtained. The advance between positions should not be a race between detachments or against time. From the first position, fire sitting. From the others, fire prone.
8									
7 6 5									
1 2 3 4									
				470	Total for Part II.				

Section 41.—Examples of field practices.

Example No. 1.

Object.—To bring out the necessity of :—

- (1) Quick reconnaissance.
- (2) Selection of position.
- (3) Rapidity of coming into action from limber.
- (4) Fire orders

Targets.—Representing a strong patrol (50 Figures).

Distance.—650.

Rounds.—1 belt per gun.

Situation.—A flank guard covering the _____ flank of a force marching from _____ to _____, is moving via _____ and _____.

Composition of flank guard—

2 companies infantry.

1 section machine gun company.

On arrival of the main guard (of the flank guard) at _____, a scout comes in from the _____ flank with the information that a strong patrol of the enemy has appeared at _____.

The O.C. flank guard orders the section of machine guns to deal with the situation, and the infantry continues its march.

(Instruction for Butt Officer, 50 targets to be raised from _____ when ordered).

Points to Criticise—

- (1) Time taken to reconnoitre.
- (2) Time taken to open fire.
- (3) Method of approach.
- (4) Position selected.
- (5) Fire orders.
- (6) Action of the detachment.

Example No. 2.

Object.—To teach the correct use of ground, and to show the necessity of engaging unsuitable targets to help the infantry in gaining fire superiority with a view to advancing.

Rounds.—250 rounds per gun.

Targets.—12 head and shoulders targets to represent enemy snipers concealed in undergrowth: 1 machine gun figure target (Plate 3) in action holding up the advance of our infantry.

Distance.—Unknown, 300 to 500 yards.

Situation.—The O.C. advanced guard, seeing his vanguard company held up and unable to push on, sends a machine gun sub-section to support it. The O.C. vanguard points out the approximate location of enemy machine gun and snipers.

Composition of vanguard—
2 companies of infantry.

Points to criticise—

- (1) Method of advance and use of ground.
- (2) Reconnaissance of position selected.
- (3) Getting into action with minimum exposure (concealment more important than time)
- (4) Method of engaging enemy and control of fire
- (5) Arrangements for observation of fire.
- (6) Use of fixed sight.

Example No. 3.

Object.—To exercise a section officer who is in a defensive position in handling his section against a determined opponent; and to exercise the N.C.O.s and men of the section in carrying out all orders issued

Targets—

- 20 (Figure 3)
 6 (" 6).
 20 (" 3 on poles).

Distance.—600, about.

Rounds.—1 belt per gun (4 guns).

Situation.—A section has been placed on a commanding position on the _____ flank of a force to prevent any enveloping movement which the enemy is expected seriously to attempt.

20 Figure 3 targets placed (in an irregular manner to represent the method of dribbling up reinforcements) to the left or right rear of the stop butt.

6 Figure 6 targets to move along the gallery.

20 Figure 3 targets to be exposed at the far end of the gallery to represent the firing line being built up.

The first group of Figure 3 targets must necessarily be put out before the exercise begins. Therefore the section officer, as soon as he has taken up his position and made his preliminary arrangements, will be told that these targets represent hostile reinforcements being "dribbled" up, and that any moving targets which may appear are in the scheme.

(Instructions will be given to the Butt Officer with reference to the exposure of the 6 Figure 6 and the other 20 Figure 3 targets).

Points to criticise—

- (1) Action and position of the various gun numbers.
- (2) Number of guns employed.
- (3) Position occupied
- (4) Action of range-taker.
- (5) Arrangements for prolonged action.
- (6) Fire orders and methods of fire.
- (7) Fire orders for fresh targets

Example No. 4.

Object.—To bring out the necessity of:—

- (1) Quick reconnaissance.
- (2) Quick decision and prompt action.
- (3) Rapidity of coming into action from limbers.

Targets.—10 screens with Figure 2 targets against them (representing a body of infantry on the march).

Distance.—Unknown

Rounds.—100 or 250 per gun

Situation.—A flank guard, covering the _____ flank of a force marching from _____ to _____, is moving via _____ and _____.

Composition of Flank Guard—

- 2 companies infantry.
 1 section machine gun company

On the arrival of the main guard (of the flank guard) at _____ a scout reports that a body of hostile infantry in close order about _____ yards distant is marching in the direction of _____.

The machine gun section is at once ordered to deal with the situation.

Points to criticise—

- (1) Time taken to reconnoitre
- (2) Time taken to open fire
- (3) Method of obtaining the range.
- (4) Gun positions selected
- (5) Simultaneous opening of fire.
- (6) Action of detachment.
- (7) Fire orders.

Example No. 5.

Object.—To test the ability of a section officer in switching the fire of his guns from one target to another.

Targets.—Six 10 foot screens, 50 yards in front of gallery, with 18 Figure 2 targets showing over the top of them, representing hostile troops firing over a parapet.

20 Figure 3 targets on poles in the gallery, representing supports.

Distance.—450 yards.

Rounds.—150 per gun.

Situation.—Enemy are supposed to have opened rapid fire on one of our working parties which they have located behind our front line trenches. The section officer at once opens fire on to hostile trenches.

10 seconds after fire is opened supports show themselves in a trench in rear to the flank of the hostile front trench.

The 20 Figure 3 targets appear in the gallery and will be lowered as, and when hit.

Points to criticise—

- (1) Original fire orders.
- (2) Fire discipline for the change of target.
- (3) Fire orders for new target.
- (4) Time taken to bring fire to bear on new target.
- (5) Effect obtained
- (6) Whether original target was abandoned.
- (7) How the Nos. 1 observed their fire.

Section 42.—Description of targets.

PART I.

Target frames.—For mounting each instructional target for Part I. the five frames shown in Plate 1 are required.

Frame A is the main frame upon which the smaller frames are hung as required, brackets being provided at the sides for this purpose.

Frame B has canvas stretched over it, on which is mounted the facing shown.

Frame C is similar to Frame B, but carries the sky screen for the landscape target. When pasting on this screen, care must be taken that its bottom edge is everywhere $22\frac{3}{4}$ inches above the bottom edge of the landscape target. This is easily done by mounting the frames as shown in Plate 2b, and checking the measurement when pasting on.

Frame D is also similar to Frame B, but carries the sky screen for the application target. When pasting on this screen, the same method and measurements must be used as given above for Frame C.

Frame E is smaller than Frame B, and is faced with canvas both front and back. On the front are mounted three similar landscape target panels; on the back, four similar Application Target panels.

Arrangement of frames.—*Practice 1: Grouping.* (See Plate 2a.) The row of figures provides aiming marks. Ranges of 800, 1,100 and 1,300 should cause shots to register on the lower, middle and upper horizontal lines respectively. Allowance has been made for the fact that all machine guns shoot $\frac{1}{2}$ -inch right of the point aimed at, by displacing the vertical lines by that amount. To facilitate indication, three thick vertical lines divide the facing into four groups. For example: "Number three group—fourth figure from left."

Practice 2: Single shot traversing. (See Plate 2a.) The target is arranged as for Practice 1.

Practice 3: Searching. (See Plate 2b.) When arranging the frames, adjust the upper one so that it is displaced $\frac{1}{2}$ -inch right of the lower one. The distance between the lower edges of sky screen and Landscape Target should be $22\frac{3}{4}$ inches, corresponding to a sighting elevation of 1,300 yards. As there are three panels, several details can be fired before it is necessary to patch out.

Practice 4: Swinging traverse. (See Plate 2a.) Target arranged as for Practice 1.

Practice 5: Oblique traverse. (See Plate 2b.) Target arranged as for Practice 3.

Practice 6: Application. (See Plate 2c.) When arranging the frames, adjust the upper one so that the vertical dividing lines are displaced $\frac{1}{2}$ -inch right of those on the lower one.

The distance between the lower edges of sky screen and target should be $22\frac{3}{4}$ inches. The vertical distances between target and sky screen will then be such that shots aimed at the bottom centre of any group should hit the centre of the corresponding rectangle on the sky screen above, using

the sighting elevations of 1,300, 1,350, 1,400, and 1,300 for groups *m*, *n*, *p* and *q* respectively. (See Plate 4).

Practice 7: Stoppages.—The instructional target must not be used for this practice. Any form of aiming mark may be used which will permit the accuracy of the firer's re-laying to be checked.

PART II.

Practice 9: Application: 400 yards. Is fired at a screen, 6 ft. square (see Plate 3) covered with brown paper. A 6 inch border of grey paper is pasted all round to increase the visibility of the screen in a dull light. A 5 ft. square is thus formed, and for this practice only hits within this square will count.

Practice 10: Traversing: 400 yards. Two screens, 10 ft. long, by 3 ft. high, covered with brown paper. Each screen is divided into six equal spaces by five vertical lines ruled 20 inches apart.

Practice 12: Application: 600 yards.—The same target is used as for Practice 9: all hits on the screen will count.

Practice 13: Traversing 600 yards. Two screens, 10 ft. long by 3 ft. high, ruled in the same way as for Practice 10.

Practice 14: Service application.—The target consists of an equilateral triangular frame (see Plate 3) with 4 ft. 6 in. sides mounted on a 10 ft. pole, and covered with brown or grey paper according to the colour of the background. For example, a grey triangle should be used against a brown stop butt.

Practice 15: Oblique traverse.—The target consists of twenty falling iron plates, arranged diagonally on the stop butt in two rows, on a frontage of 36 ft., at an angle of 90° to each other.

Practice 16: Fire from successive positions.—Eight falling iron plates (painted white) arranged on the stop butt as shown in sec. 40, Practice 16.

1.

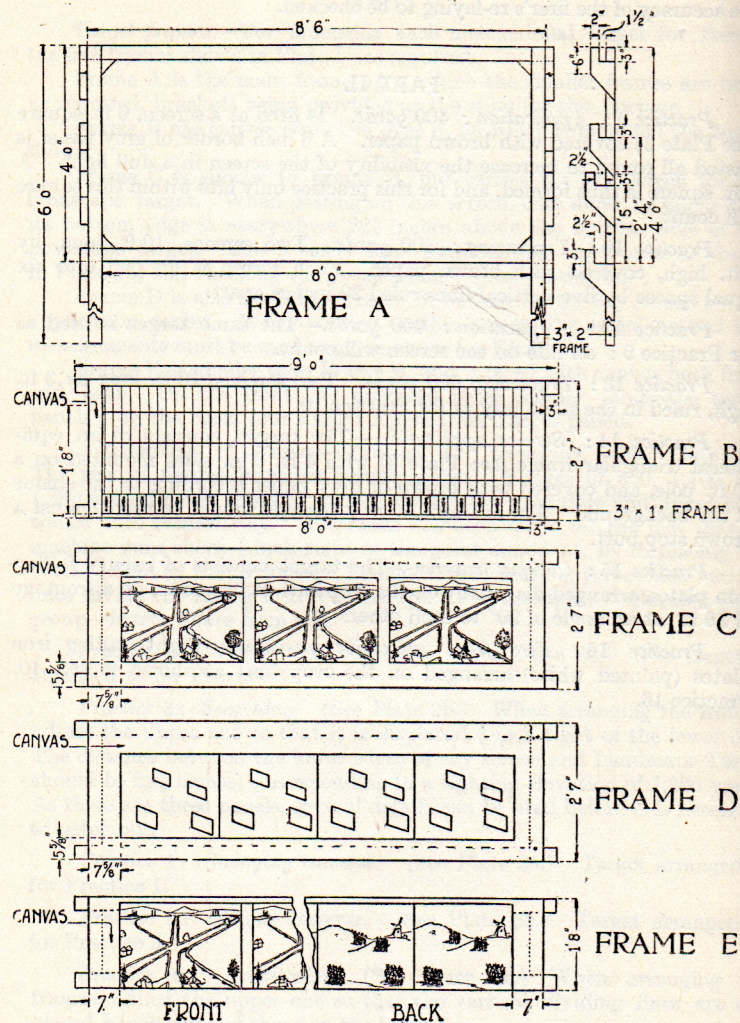
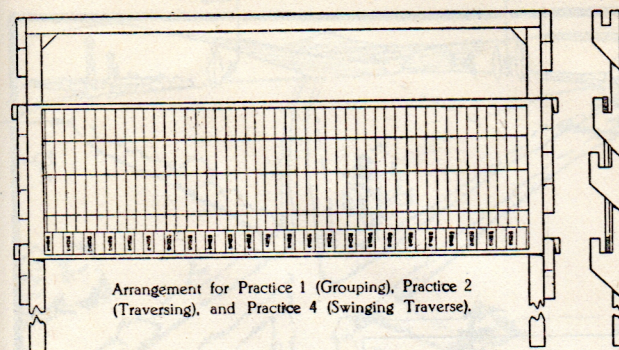
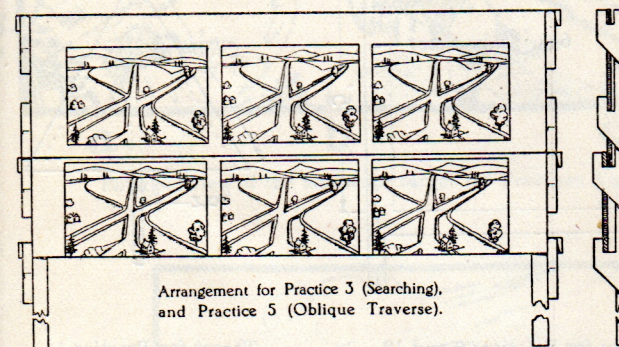


PLATE XXV.—MACHINE GUN COURSE TARGETS.

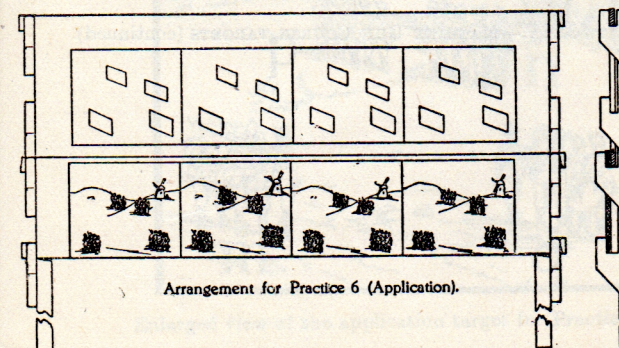
2.



a



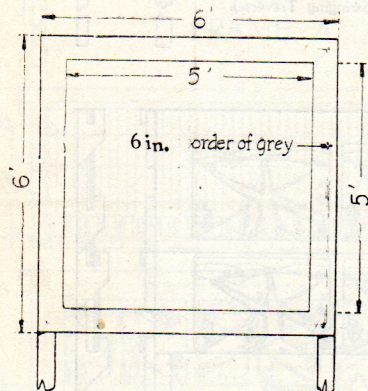
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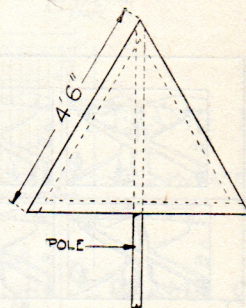
c

PLATE XXV.—MACHINE GUN COURSE TARGETS (continued).

3.



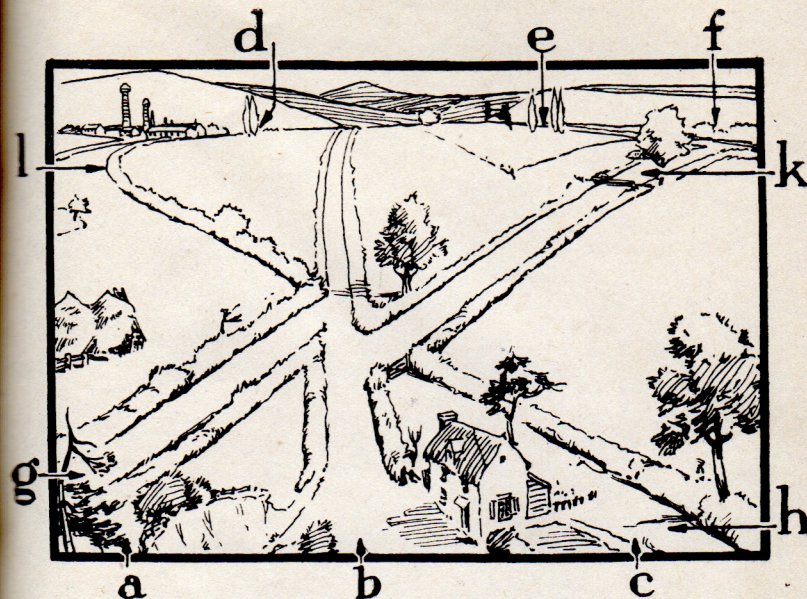
Target for Practices 9 and 12.



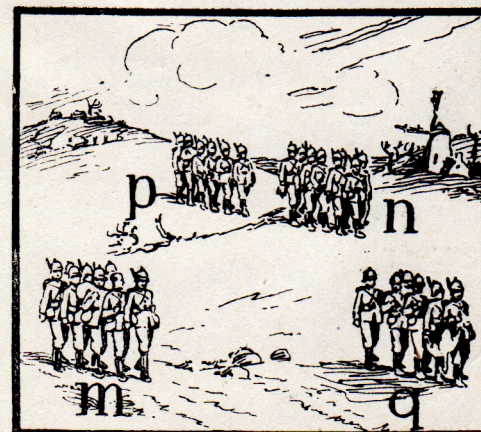
Target for Practice 14.

PLATE XXV.—MACHINE GUN COURSE TARGETS (continued).

4.



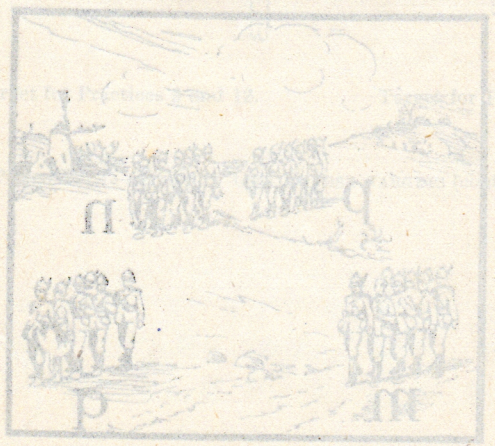
Enlarged view of the landscape target for Practices 3 and 5.



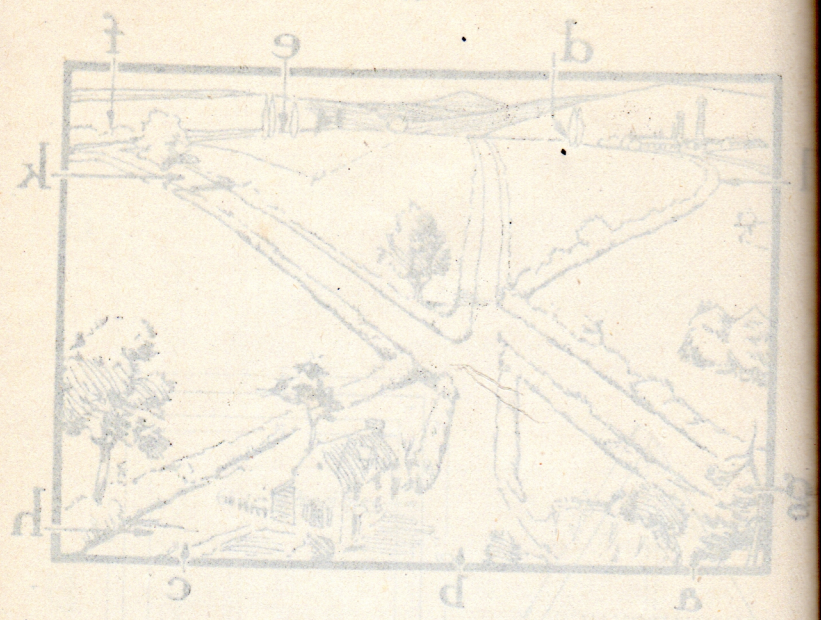
Enlarged view of the application target for Practice 6.

PLATE XXV.—MACHINE GUN COURSE TARGETS (continued)

Enlarged view of the application target for Practice 6.



Enlarged view of the landscape target for Practices 3 and 4.







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